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GLEANINGS IN BEE CULTURE

VOL. XXXV.

JAN 1, 1907

NO 1.



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Beeswax taken in exchange for supplies.

E. E. PRESSLER, WILLIAMSPORT, PENN.

GLEANINGS IN BEE CULTURE

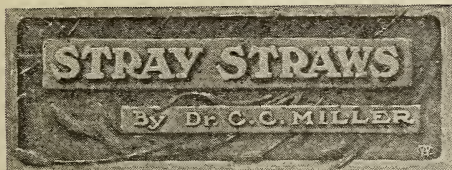


A Journal Devoted to Bees, Honey, and Home Interests
Illustrated : Semi-monthly : One Dollar per Year
Published by The A. I. Root Company, Medina, Ohio

Vol. XXXV.

JAN. 1, 1907.

No. 1



YOU SAY Schenk publishes a Brazilian bee-paper. He was at the big convention in Germany, and I think he told them there he had sold out. [The last issue of his paper had his name at the head of the editorial page.—W. K. M.]

How WOULD it do to have baby nuclei in a fertilizing-tent? Then they could be supplied with food and do *all* their flying inside. [That would be just the place to put them if the general scheme would work with large colonies.—Ed.]

IS NOT one reason why mosquito-netting is preferable to wire cloth for a fertilizing-tent because the bees can see mosquito-netting better? Wouldn't wire cloth be better if painted white? [There is something in this. If so, why not go a little further and use cheese-cloth instead of the mosquito-bar? If this be a fact, why would not a dome-shaped building without windows be suitable?—Ed.]

YOU HAVE the better of me as to British prices for honey, Mr. Editor, p. 1556. Glad of it. Glad, too, that you, aided and abetted by W. K. Morrison, are doing some good work in helping to give an upward slant to prices in this country. Very certainly they have not gone up in proportion with prices of other commodities in general. I'm expecting them to.

"EIGHTEEN books in the Bible refer to honey," page 1564. Didn't some of them escape you, Stenog? I find the word "honey" in 22 of the books. In 4 of these 22 books also

occurs "honey-comb," meaning honey; and "honey-comb" is also found in Luke. "Honey" occurs in the Authorized Version 52 times, and "honey-comb" 9 times. But in the American Revision "honey-comb" is stricken out of Luke.

SOME ONE ought to wake up in this country and get up a set of bee-keeper's souvenir postals. We're away behind Europeans. G. W. York has gotten up one that's very funny, and fine in its place; but the French have a number of different kinds, besides advertising envelopes. We're behind. [The Root Co., as soon as it is settled in its new printing-house, will doubtless make some attempt in this direction.—Ed.]

HEARTY thanks to W. K. Morrison for calling attention to an error of mine in saying that excessive use of sugar leads to Bright's disease. Of course, it should be diabetes. There is no excuse for such a flagrant blunder. [But, doctor, you do not tell the rest of it. It was Prof. Cook who originally gave out the statement in one of his articles. He probably would be equally glad to have the correction made just the same. The two diseases are somewhat similar, and might temporarily become confounded in one's mind while writing.—Ed.]

THE *Irish Bee Journal* protests against the word "quaking" as not a correct description of the sound made by a virgin in her cell—thinks "piping" the right term, whether the queen is in or out of the cell. Well, it's handy, anyhow, to have a separate word for each, Bro. Digges, and "quaking" has some rights by way of usage for the past half-century without previous protest. Perhaps my good brother will pardon me for saying that, to my ear, the sound made by a virgin in a cell is more like "quahk" (rhyming with "walk") than it is like "pipe."

ALLEN LATHAM, in *American Bee-keeper*, commends fused calcium chloride—costs \$1.50 for 10 lbs., \$10.00 for 100 lbs.—to dry

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Withdrawn

out bee-cellars. Get a dozen or so galvanized pans, and galvanized netting 6 mesh or so to the inch, to rest on each pan. Put a pound or so of the salt on each piece of netting; distribute the pans in the cellar, and as often as the salt is dissolved dry it out in the stove oven. May be good. [While I have not tried it, I should suppose this would be rather expensive, and that a stove or ventilator, or both, would be cheaper and better.—ED.]

W. H. CRAWFORD, referring to the Straw about my bees gathering pollen late, p. 1347, says that his bees, in October, 1904, gathered powder from cottonwood leaves after frost had turned them yellow; also rust from oats, and in February smut from shocks of Kafir corn; and, strangest of all, the dry dust from sheep manure. Then he hands me this question: "Do you suppose this substance was a real benefit in brood-rearing?" I don't know; but I hardly think the bees would waste time gathering useless material. [Why could they not use it for next year's brood-rearing?—ED.]

ONE REASON Congress gave for sitting down on Roosevelt's spelling was that the printers would be confused in using the two kinds. I've been trying it a few years, and had no trouble from the first in writing "worked" for print and "workt" in private correspondence. [Personally I was sorry that Congress "sat down" on Roosevelt on this spelling reform. You may, then, ask why we do not adopt it. Simply because GLEANINGS is not big enough to blaze the way for the reform. If two or three of the large publications like the *Ladies' Home Journal* would adopt it, we should be glad to follow suit.—ED.]

STENOGRAPHY, you're all right in saying "*propolis*," p. 1564, but are you sure "the origin of the word would seem to show that that is the best way"? If so, wouldn't the first syllable be accented in "proboscis," "production," "prohibit"? [I am glad you have called in question the correctness of the definition of the word *propolis*—that is, "in front of the city." That could have no bearing in apiculture. You seem to think there was some misunderstanding as to which syllable we should accent. Certainly the first; but the point in dispute in England was as to whether that syllable should be called *pro*, with a long o, as in *pro*-bation, or short as in *prop*-er.—ST.]

"JACOB FUNK, winner of the grand prize at the International Stock Show, whose herd of Black Angus cattle brought the record-breaking price of \$17 per hundred on the hoof, is a resident of Bloomington. In addition to the regulation corn and oats and pasture diet, the cattle were given molasses every afternoon. Mr. Funk maintains that sweets improve the beef and make it sweeter."—*Chicago Daily*. Think of \$17.00 per 100, live weight! Sweets in right amount, no doubt, improve the human herd also. Two things we should take pains that they know: First, that no other sweet compares with honey in lusciousness; second, that honey stands in the

front rank as an easily assimilated food. [I once reported the case of a bee-keeper, Mr. Frank Boomhower, of Gallupville, N. Y., who fed a hog on some unsalable buckwheat honey. I happened to visit him at the time, and I never saw a finer and nicer specimen of a pig than that, and he was very docile and gentle. I have heard since then that, if you want to make a horse or any other animal docile and kind, you should feed him sugar. Of course, honey would be better.—ED.]

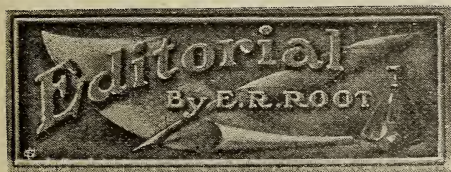
D. LABERGE gives as a "fact" that, "if you make a hive queenless, the bees must move either eggs or larvae in order to raise another queen." Oh, no! friend LaBerge, there's no "must" in the case; and if your bees did it, it was a very, very exceptional case. [Are you not going to the other extreme, doctor? In going over the index for several years back, I am surprised at the number of cases where bees moved eggs. While I grant that cells will usually be built around eggs laid by a queen, the cases are not so very exceptional where they will move an egg over to a cell already built, or partially so. In our queen-rearing apiary we see evidences of this more than you would in a comb-honey yard.—ED.]

DOOLITTLE keeps water in his apiary to wash honey off his hands, page 1563. Good thing. I don't always have it—not often, if you must know—and I scratch up a handful of soil, wash the honey off with it, and then wipe my hands on the grass. It feels clean in comparison with the honey, and is always at hand with no trouble. [I have tried this scheme of rubbing my hand in dust or loosened soil many a time, and have found it to be very effective. A little more rubbing will then remove the dirt as well as the honey, leaving practically nothing but a stain of mother Earth. Of course, the use of water and a towel is better; but very often at an out-yard such conveniences are not at hand.—ED.]

APROPOS of your plan of enclosing bees and giving them a flight on good days, Mr. Editor, page 1560, the French authority, Devauchelle, tried something of the kind with 30 colonies or more, and reports quite fully in December *L'Apiculteur*, page 448. One trouble was that he couldn't be sure of the weather in advance. When every thing was favorable and he opened up, there would come clouds and falling temperature, with heavy loss. Moreover, when the enclosed colonies were given their liberty they came out in more dense masses than the free colonies, with corresponding loss. I think he is still experimenting. But I think his hives are made dark, with special provision for ventilation, somewhat after the Gouttefangeas plan. [The more we test those cages for outdoor bees, the more we feel uncertain of their value. I am fearful that they may do more harm than good; but if the bee-keeper can be on hand at the right time, and take them off before the bees *know* they are confined, and keep them in at other times when

they ought not to come out, why, they should do more good than harm. We are trying them, however, on some of our hives, and will be able to know more about them next spring.—ED.]

I LEARNED at the Chicago convention that the crop of one of the Chicago bee-keepers (extracted) was sold at 50 cents a pound. It was not a large crop, and I suppose it was sold to neighbors who were willing to pay big so as to be sure of a pure article. There are not a few who will pay a fancy price for a fancy article guaranteed pure; and when the pure-food laws make it sure that what is sold for honey is honey, a lot more of the middle classes will be willing to purchase at a fair advance. [Every now and then we run across cases where the current belief in so-called manufactured comb honey has helped to boom prices on honey produced locally. In some cases bee-keepers have seemed to feel that it was to their advantage neither to confirm nor deny the canard, on the principle that it would be folly to make their customers wise when the willful ignorance that is bliss boosts the prices of their own home production. I question whether the policy is a wise one in the long run, but I suppose it is something as Prof. Cook said of one of his neighbors in Michigan. This man, probably the greatest raiser of plums in that State, said he was thankful for the curculio that killed all his neighbors' plums, but did not bother his fruit, as he knew how to destroy them before they did any harm. In the same way our deadly enemy, foul brood, sometimes freezes out the unskillful in a locality, leaving the man who knows how to handle the disease in undisturbed possession of the locality and the markets. There is no great loss without some small gain somewhere.—ED.]



THE following telegram on the way back to Washington explains:

FORT WAYNE, IND., Dec. 31, 1906.

ERNEST R. ROOT:—"This is my owl, my native land." Happy new year. FRANK BENTON.

THE opponents and advocates of the divisible-brood-chamber hive will be glad to read the article by J. A. Green on the subject in his department in this issue.

In the front cover design for this issue the reader may fail to note that the bells that are dropping out wreaths of live bees are also peeling forth the happy New Year (1907) to you all. Look again if you didn't see it.

THE RURAL BEE-KEEPER; BEE JOURNALISM AS A PROFESSION.

THE *Rural Bee-keeper*, an excellent publication, has sold out to the *American Bee-keeper*, which will take care of its unexpired subscriptions. As Mr. Hutchinson says in the *Review*, the *Rural* was one of the best of the lately started journals. In commenting on the demise of this journal Mr. Hutchinson says:

The plain fact is, the field of apicultural journalism is now pretty well covered; and a new journal, to succeed, will need to be different from the others, have an editor of most decided ability, and barrels of money. If I should sell the *Review* now for \$3000, I would not, with that amount of capital and my twenty years of experience, think of such a thing as starting another journal. Do not think that I am not making money in publishing the *Review*. I am; but the same amount of money, time, and energy, put into straight honey-production, would bring me a much larger profit.

A SWARM IN DECEMBER AT THE HOME OF THE HONEY-BEES.

It was a late swarm that issued from the parent hive on December 26. It took a long flight to New York city, where, according to last accounts, it had been successfully hived. Laying aside the figure, the contracting parties to the wedding were Miss Carrie Belle Root (the youngest daughter of Mr. and Mrs. A. I. Root) and Mr. L. W. Boyden, who for several years has been manager of The A. I. Root Co.'s office in New York. The groom is a brother of A. L. Boyden, the Secretary of the company, and who married Constance, the second daughter of A. I. Root.

The young couple will be at home after Feb. 1 at 1384 Bristow St., New York city, where they will be glad to see their friends, as well as those of The A. I. Root Co. Owing to ill health A. I. R. was obliged to leave for Florida earlier, and was therefore unable to be present.

THE NATIONAL-CONVENTION PICTURE.

ON the last day of the convention of the National Bee-keepers' Association at San Antonio, General Manager France called us all over to the steps of the city hall to have our pictures taken. An engraving of this picture is shown on pages 34 and 35. When we from the North left Chicago we wore our overcoats and had no trouble in keeping cool. But down in San Antonio our overcoats and even vests were laid aside, and then we suffered from the heat. It was like wearing winter clothes in August. So on the day that the picture was taken the sun was shining brightly (entirely too brightly for comfort), and the air was as warm as it often is in summer here in the North.

In a way this is a remarkable picture, for it represents a large number of bee-keepers, almost half of whom came from out of the State. While the attendance was not so large as at Chicago the year before, yet, in the full sense of the word, the convention was national in its character. Local meetings are valuable, but in some ways a national meeting is more so, for it is to the advantage of every bee-keeper to know how the work is done in other parts of the country

as well as in his own. Sixteen States were represented, the number from each being as follows:

Illinois, 8; Michigan, 2; Missouri, 7; Wisconsin, 11; Indiana, 5; New York, 3; Ohio, 2; Minnesota, 1; Kansas, 2; Utah, 1; Colorado, 1; Texas, 75; Nebraska, 1; Florida, 2; California, 1; District of Columbia, 1.

San Antonio is a good place to hold a convention. The welcome that was extended to us by the truly hospitable Texas people will never be forgotten. As one bee-keeper said, "The latch-strings always hang on the outside."

OUR INDEX FOR 1906.

THE index for 1906 GLEANINGS, inserted as a supplement in this issue, is very complete. One can form some idea of the number and variety of subjects discussed in our columns for last year when it is stated that there are something over 4000 distinct references. The increased size of the year's volume necessarily makes a voluminous index.

Some of our readers have objected to our custom of running the references all in together, instead of making a separate line for each reference. To follow the latter plan would make an index the size of a single issue of GLEANINGS, and a big one at that. It took a deal of time on the part of H. H. Root and the writer to prepare it; and if our readers find it helpful we shall be repaid.

By the way, you will find it interesting and highly instructive to go over this index, and look up some of the references to freshen the memory. As time goes on, one is liable to forget some of the conclusions arrived at, or the remarkable agreement on some propositions. As I prepare this index, or help to, I learn something by going over the subjects. In this way I get a bird's-eye view of the whole range of discussion for the year—that is, a review. Every one can do the same.

A FOUL-BROOD LAW FOR EVERY STATE IN THE UNION.

MANY of our State legislatures will be in session during this winter. It will then be in order for the bee-keepers of those States that have no foul-brood laws, or, better, a law against the diseases of bees, to get them enacted. It means a lot of hard work, time, and railroad fare for some two or three bee-keepers; but somebody has to do it.

The greatest obstacle that will be met will be the lack of funds to defray the salary and expenses of an inspector or inspectors. We met that same difficulty in Ohio, but solved it by suggesting that the law-makers put a tax of one cent on each colony of bees kept in the State. This will raise a fund all the way from five hundred to two thousand dollars a year; and there is not a bee-keeper who would object to this tax, provided he knew that it would be the means of protecting him from the disease. There are very few bee-keepers who have over 300 colonies; and a man with that amount of investment certainly would not object to paying \$3.00 a year as a sort of insurance against disease. The larger the invested capital in bees, the

more willing would the bee-keeper be to pay the tax of one cent per colony. The small bee-keepers certainly would not object to paying ten or fifteen cents as their proportion. When the bee-keepers themselves are willing to submit to a small tax, no legislator could object to voting for a bill providing for the appropriation of such a fund to protect the whole State. It ought to be easy to get a foul brood-law in every State in the Union if the cost of inspection be assessed against the bees at one cent per colony.

THE PRACTICAL WORKINGS OF THE NEW PURE-FOOD LAW ALREADY BEING FELT.

OUR readers will not forget that the new national pure-food law goes into effect the first day of this year, 1907. This is one of the greatest pieces of legislation that was ever passed by Congress. The chaps who have been selling adulterated or misbranded goods have been endeavoring by every means possible to dispose of their commodities before the beginning of this year; and now that it has begun, and some of the goods are not sold—well, they are up against it. To label them for what they are, will kill the sale of them.

The probable effect of this new law also will be to lessen the amount of bleached sugars on the market. Both beet and cane granulated sugars, as is well known, are bleached, and some of the substances used for the purpose are deleterious; and, rather than have this fact come out, the sugar-men will possibly substitute the pure cane sugars with their natural straw color. This will give the general public a cheaper and better sugar, with more flavor to it, and the bee-keeper a better food for his bees at less cost.

The fact is, the purveyors of all bleached, colored, or disguised foods of any kind are all agog. Like the senator, they are wondering "where they are at." Even the doctors must show what they put into their medicine when they give it to a patient. The candy-men must not use any injurious substances either for coloring or for making candy. That means that commercial glucose, often with injurious sulphites, will have to be eliminated.

But the new law does not hurt any honest man. It may embarrass him until he knows its provisions; but it will be *mighty embarrassing* for the man who attempts to sell adulterated or misbranded goods.

WIRE-CLOTH SEPARATORS.

ON p. 1304, Oct. 1, I stated that our experience with the wire-cloth separator in the production of comb honey had not been very satisfactory; that the bees built brace-comb attachments to the wire, so that when the separators were removed it left bleeding gashes in the honey. This confirmed the experience of Mr. C. H. Dibbern. But since that time we have received a number of reports from various persons who have tested them with the greatest satisfaction. The sections are nicely filled out, they say, and

there are no attachments to the separators. Among the number is Mr. J. H. Albaugh, of Osage, O., who sent us a wire-cloth separator that he made himself—wire cloth four meshes to the inch, galvanized. This was as clean of attachments as it was the day he made it. He writes that he has used fifty of these without a single attachment of comb, and that out of the same number of wooden separators there were quite a few brace-combs.

Strange how experiences differ! The only way we can account for these is to charge them up to locality or to the particular strain of bees. Speaking of bees reminds me that some bees will build burr-combs in spite of any discouragements that may be put in their way.

BEESWAX IN THE ARTS; WHY USED FOR EC-CLESIASTICAL PURPOSES.

UNDER the Hepburn pure-food law, paraffine for making candy, I am told, will be outlawed as deleterious to health. Beeswax, on the other hand, has never been regarded as an injurious food substance. From time immemorial it has been considered a constituent of one of the most delicious foods, as well as the most healthful, that the world has ever known. There is, therefore, no reason why it should not be a substitute for paraffine in some of the fancy candies. Whether confectioners will use it or not remains to be seen.

It is true that, the more legitimate uses we find for beeswax, the higher the price will be. This will tend to stiffen prices on foundation; yet if a bee-keeper can get more for the wax in the first place, he will be compensated.

By the way, that reminds me that beeswax has a great many uses in the arts; and although paraffine and other mineral waxes can be secured at one fourth the price, the article from the hive far surpasses them for some uses. For example, nothing is equal to beeswax for floor and all hard-wood finishes. I asked an expert the other day if it were not true that some of the mineral waxes were used. He said they were not to any great extent, because they could not take the gloss nor fill the pores as well. Beeswax, he explained, will give a hard dry gloss where paraffine would make a greasy daub.

It is well known that the Roman Catholic Church will not use any thing in place of beeswax for candles. Paraffine, ceresin, tallow, or any thing of that kind for candle service will not be tolerated. From a ceremonial point of view, beeswax is the essence of purity, while paraffine is a distillation from dirty mineral oils.

A candle of beeswax burns with a clearer flame than a candle of any other substance; and, what is more, it leaves a pleasant odor in the room. Paraffine or tallow has a greasy, sickening smell.

Perhaps some of our bee-keeping friends would like to try a beeswax candle. Take a piece of sheet wax or even a piece of foun-

dation. Lay on one edge of it some candle-wicking; then roll up the wax and the wicking as one would roll up a cigar. Fit this into a suitable candlestick. Light it, and see what a beautiful light you get. Of course, such a candle would not equal by a long way a good kerosene-lamp or any of our modern lights; but for a candle it surpasses any other substance; and after it has burned a while you will notice a pleasant odor pervading the room.

THE NEW PURE-FOOD LAW; FURTHER QUESTIONS ANSWERED.

WE are getting a good many inquiries in regard to the rules and regulations governing the new national pure-food law. Nearly all the questions are answered in our editorial explaining this law, on page 1350 of last year. There are one or two other questions, however, that are not there answered. One of them is this: Is it necessary to attach labels on bulk packages that are shipped to wholesalers? I find nothing in the law that makes any requirement on *pure food*. It is designed to stop misbranding and to prevent putting any deleterious substances into foods or drugs. Nowhere does it specifically require the use of a label on a commodity made of pure or harmless substances; but when a label is used it *must* state the facts. Any mixture of glucose and honey or any combination of a pure food with an injurious substance *must be labeled*, either for bulk or small packages, *showing the exact proportion used*.

A question is asked whether a package must contain the exact amount, by weight or measure, specified on the label. Most assuredly; but reasonable latitude is allowed, so that, if a comb-honey carton specifies on the outside of the label 1 lb., the dealer or bee-keeper selling such honey would not be liable if it contained 14 to 15 ounces or 17 or 18. The regulations state that the contents shall conform, as nearly as possible, to the exact amount specified on the label on the package. But, as I understand the law, any one who sells a bottle of honey and labels it 1 lb. would be liable if that bottle contained only 14 ounces. I presume the reason is that the bottler could just as well put in 16 ounces as a smaller amount. Food stuffs of every kind, where the amount can be exactly measured, if labeled to contain a definite quantity, must contain *exactly* that amount.

Referring to *comb* honey again, it would seem to me better to have labels not specifying any definite amount of honey, because it is almost impossible to make a single section come up to a certain required weight. Therefore, to be on the safe side I would advise leaving out the quantity and putting on the words "pure honey" or "pure clover honey," "pure alfalfa honey," etc.

Dr. Miller summed up the gist of the new law in a word when he said it only required that the whole truth and nothing but the truth should be told about food and drugs sold.



A small (say four-inch) pipe connecting through the ceiling above, or otherwise, with a pipe or chimney into which heat passes makes an excellent means by which foul and damp air can be carried from the bee-cellar. Some old carpet or bagging to cover the outside walls is often another profitable addition, and in these ways the wintering of bees is made a greater success, and the profits of the apiary greatly increased.

From the headings of the address of Dr. H. von Buttel-Reepen, page 1291, I judge we shall have some exceedingly interesting apicultural information in the translation which is to be published in GLEANINGS. I judge we may have the confirmation of a theory I have had for years, and which I have given to my students in the apiary as such. That is, that a colony long queenless is not robbed out more readily than others, because they have less of vim and energy, but because of unfavorable conditions. A queenless colony is energetic enough at stinging the apiarist making an examination; in fact, their reputation is a little above the average in this direction. My theory is that, if one kept giving them plenty of young brood, there would be no difference as to being robbed out, because the brood and perhaps the food imparts a peculiar odor to the hive, the absence of which is conspicuous when other colonies have it. Or in a long-queenless colony there are only old bees, and these are not so keen at detecting the strange bees. Of course, we understand this thought is speculative.

R. F. Whitesides, Victoria Co., Ont., suggests in a letter that the secretary of the Ontario Bee-keepers' Association be paid a salary in proportion to the number of members in the association as an incentive to work. Not a bad idea, only there is much more to do than to get members. Mr. Whitesides writes, "Alexander, in GLEANINGS, sends me a ray of sunshine in saying cappings should be washed and the sweet water used for stimulative feeding." Thanks—not any for me until foul brood is no more in the world. One known or unknown diseased colony in the apiary may infect all the sweet water, and the ray of sunshine become a very thunder-cloud to break over your head. I have known large apiaries ruined by one dose of feeding back honey. To feed back honey is *unwise and dangerous*. To feed back honey from cappings increases the danger of infection. I could name well-

known bee-keepers who have bitterly regretted the action, and will never in their lifetime repeat the mistake.

At this date, Oct. 31, it has been announced that there will be a Franco-British Exhibition of science, arts, and industries in London, England, during 1908, which will be fully representative of every aspect, region, and people of the French and British nations. With a view of inviting Canadians to join in the organizing scheme, the organizers have asked that the name of Mr. Harry Cockshutt, Brantford, Ontario, President of the Canadian Manufacturers' Association, be added to the general committee. Canadian bee-keepers should see that a honey exhibit worthy of the industry and of them be prepared and placed at this Exhibition. The exhibit should be out of the crop of next season. We can properly keep the crop over; comb honey should be collected during the autumn of next year, and at one point be properly cared for. During the season of 1908 more can be collected and allowed to replace partially the earlier exhibit. How appropriate it would be for the French Canadians of Quebec to have a conspicuous amount of choice honey at this Franco-British Exhibition! The conductor of this department feels sure that fancy Canadian honey can find a good market in Great Britain, and at good prices.

Awards, if properly set forth, should help the demand for honey in our home market. This idea has not been used to any extent. At the Paris, France; Glasgow, Scotland; Buffalo Pan-American, and St. Louis Expositions, gold medals were obtained by Canada for honey exhibits.

If Canadian bee-keepers, with the help of the Government as to expenses, etc., make up their minds they will probably add another laurel to the number. It should be a display larger than has ever before been known.

ADULTERATED HONEY.

Here in Canada many of us as individuals, when we suspect adulteration, send the name and address to the Department of Inland Revenue, and there the matter is taken in hand. Of course, such a method is bound to make a bad *percentage showing*. We can, however, be proud of the following recent record from that department at Ottawa, upon examining 54 samples of honey collected during March and April last, in different parts of Canada. Of this number 10 were found to be adulterated. None in the Maritime Provinces; three were adulterated in Quebec, three in Manitoba, two in Ontario, one in Alberta, and one in British Columbia. Some years ago it occurred to me it would be an excellent plan to pass a resolution condemning a firm or party (giving their name) that had adulterated honey, adding that it had shaken our confidence in all other goods they put up. This was done, and a copy sent to the offenders and the press. I know of no more effectual way of dealing with this matter.

SWARMING AND LARGE HIVES.

The very fact that Holtermann has a queen-cell detector to his hive as described in GLEANINGS proves that it does not entirely prevent swarming. See Mr. E. F. Atwater's remarks, page 1237. The supers have to be managed properly; the entrance, ventilation, and the brood-chamber. There will be less swarming under proper management, but it can not be depended on absolutely, even then. I did not have two per cent of my bees with the swarming impulse this last season. Let me tell Mr. Atwater that the countryman of mine he refers to allowed his stocks to get so crowded that, through lack of room, entrance, and ventilation, I have seen the entire front of the hive covered with bees; he used (or, rather, abused) my hive, but that is not my system.

PLACING HIVES OF BEES IN THE CELLAR.

The majority of bee-keepers, when placing bees in cellar repositories, set them upon stands, bringing the hives a greater or less distance from the ground. We are taught and we teach that the foul air, supposed to be largely carbonic-acid gas, is heavier than the air, and sinks to the bottom. In theory this is partially true; but such a tendency is overcome by air-currents more or less active in any ordinary cellar intensified by air-movements, the result of slight activity in the hive by the bees. Long observation has taught me that there is, as a rule, greater indication of moisture about hives in proximity to the cellar floor. The reason, in my estimation, is that the temperature in a good cellar is, as a rule, lower close to the ground than it is further up, and the lower the temperature the more readily condensation takes place.

UNCOOKED FOOD.

On page 1196 Mr. A. I. Root tells us how he is living on uncooked food, nuts, grain, and the like; he has also been living in a log cabin up in Michigan. I should judge he was getting pretty close to a state of *savage splendor*. The savages, of course, kept no sabbath; and on another page Mr. Root tells us how, after a very short period on this diet, his grandson breaks out into this lack of observance of the sabbath. I fancy, brother Root, it would take some time longer for you to show the symptoms; but *better quit in time*. In any case I'll guarantee if you had a serious sickness it would not be *uncooked food* you would resort to, but Dr. J. M. Lewis, Rose Building, Cleveland, and the lean broiled-meat diet under his supervision. Boys and men will stray when they are well, but real sickness often brings them back home if they get able to get there.

BRANT COUNTY BEE-KEEPERS' CONVENTION.

The above association had a more than ordinarily interesting meeting at Brantford, Oct. 27. In the immediate vicinity, say a circle of two miles or a little over, and in the

city, I counted up at least 1000 colonies of bees, and there are quite a few bee-keepers in the county, outside of this circle. Last year the president was Mr. Chris. Edmanson, and vice-president J. H. Shaver, both thoroughly good bee-keepers. This year the order is reversed.

OUTSIDE IDEAS SOUGHT.

The writer here suggested that a little surplus fund on hand be spent in bringing some good bee-keeper from the United States to give new ideas. New York State is in winter the nearest point, and he thought some one from there would come for actual expenses—all that the county society could afford. It would be well to have the event take place when the district convention took place, which would likely be the latter part of January. The plan was decided upon, and the matter left in the hands of the executive committee.

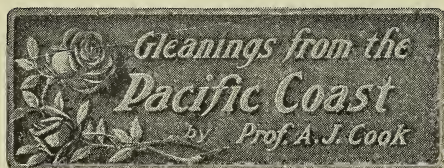
FEEDING BEES FOR WINTER STORES.

In the discussion upon this subject, Mr. Wm. McEvoy, inspector of apiaries, who was at the meeting, certainly gave some valuable suggestions as to how a colony might be fed late in the fall. He advocated, if feeding until late had been delayed, feeding from under the brood-chamber. He would remove the center combs in the hive—"pull the heart out of it," as he expressed it. So contracting the brood-chamber would increase the temperature and enable the bees to take up the feed in pretty cold weather. Even at the date of the convention the bees would yet ripen the honey, build comb if necessary, and cap the honey. The feeder would be a modified Miller feeder, so arranged that the bees would go into the feeder from the top. Where the bottom-board was attached to the brood-chamber, as in chaff-packed hives, he would take glass jars, such as the Gem (Mason), put a perforated zinc with a $\frac{1}{8}$ -inch hole in place of the glass, the rubber band over this, and then the screw cap tightened over all, the jar being, of course, first filled with the syrup. An oil-cloth with three or four round holes is now placed on top of the frames; two sticks, $\frac{1}{2}$ inch thick, placed across the holes, and the jars inverted upon the sticks. Packing should then be placed about the jars and upon the oil cloth to keep all warm. A hive properly contracted could take up 15 lbs. of syrup in two feeds, and ripen the food as well. One member, Mr. John Clarke, stated he had fed a colony in this way in the depth of winter, and with success.

LARGE OR SMALL HIVES.

A discussion on large hives created a smile when the writer asked Mr. Edmanson to give his experience with a small hive and the twelve-frame Langstroth hive. Mr. Edmanson said he had the Richardson hive (capacity between eight and nine frame Langstroth hive), and his son, Gladstone, had in the same apiary a dozen of the twelve-frame Langstroth-Holtermann hives. The flow had been very poor, but the latter hives had aver-

aged more than the former by twenty to twenty-five lbs. per colony. Another member stated that the buckwheat honey-flow had really not been as good as last year, but it had been remarked by the small-hive men that, owing to less swarming, and, therefore, less broken-up stocks, they had secured more than the usual amount of buckwheat honey. It was admittedly an eye-opener to some.



NERVOUS SYSTEM OF BEES.

In our last article was given an account of the muscles of insects where the close similarity between those of insects and higher animals was pointed out. It was shown that, in a general way, there was very little difference, though the interesting fact was stated that, in insects, the muscles are very much stronger and more quick to act. They seem to show a perfection which is found in no other group of the animal kingdom. As was stated in the last article, sensation and voluntary motion are the exclusive function of animals; and where animals show a superiority in these functions we regard them higher in the scale of life. Of course, muscular action and voluntary motion are in close accord, and thus, in one sense, insects (and, of course, our bees, which stand at the head of the insect world) may be said to rank very high. Even man has not the muscular strength in proportion to quantity that the insects exhibit.

It will be interesting, also, to study the nervous system of insects and compare it with that of ourselves and the higher animals, and see if we come out any better in this comparison. The brain and nerves are, of course, the chief seat of sensation as well as of voluntary motion—in fact, of all motion. While the muscles are the real actors in motion, yet they must gain their stimulus in all normal action directly from the nerves; and, in case of voluntary motion, where the will and consciousness take part the brain is the great center of action. It is, then, of peculiar interest to study this part of the insect organism and note its development.

The nervous system of all *Arthropoda*, which includes all animals with a jointed structure, which also have jointed legs or feet, is different from that of any other of the great group of animals. High up in the head is the brain, which, for size and development, compares well with even the highest of animals. From this runs a double nerve cord which separates to surround the œsophagus, or gullet, and then runs to the under side of the body at the very front part of the

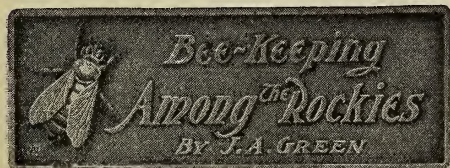
thorax, or great division of the body just back of the head. It then extends the whole length of the body along the under side. The double cord here seems single, but the microscope reveals its true nature. In passing along from thorax to tip of the abdomen it passes through a number of ganglia. In the larvæ of all insects there are very many of these ganglia, which are merely collections of cells of gray matter, often one for every segment of the body. In the change to the mature insect the number of these always diminishes so that, while there are seventeen ganglia at first in the larva, the adult worker bee has only nine. This includes the brain, which may be said to be the first ganglion, and which, of course, is large and highly developed.

As in the higher animals, including men, the nerve system is made up of two kinds of tissues—the cells, or ganglia, which is gray in color, and nerves, or fibers, which are white. We may compare nerve action to the telegraph, the ganglia are the operators, while the nerves are the wires which convey the messages. There are also two great systems. One I have just described, while the other, consisting of scattered ganglia, in us is called the sympathetic system. It is more closely connected with the involuntary organs, and has to do with the stomach, intestines, etc.—those organs which move without our volition or knowledge. These influence the action of the involuntary or unstriated muscles. After we eat, the stomach and intestines move not a little. The stimulus to such motion evidently comes through these sympathetic nerves. In our own bodies we refer to the first system as the cerebro-spinal and the other as the sympathetic. In insects we refer to them as the brain and ventral nerve cord and the sympathetic system. We thus see that the nervous system in insects is in no wise peculiar except in position. It only remains to be said that the nerve fibers are, as in our own case, of two kinds—sensitive and motor. The sensitive fibers extend from the skin and sensitive membranes to the gray matter of the cord or brain. These then carry the sensation from the outside to the centers, and without them in healthy action we should not sense what is going on about us. The motor fibers, on the other hand, convey from brain to muscle, and carry the impulse which immediately causes action. A reflex act is where we act in response to a sensation received. Habitual action and also instinctive acts are probably reflex acts with the spinal cord as the center. As the brain must act to make us conscious, such actions probably have their center in the spinal cord. Some actions which are usually unconscious may, upon occasion, become conscious; and while such actions are usually involuntary, volition may come in as we notice in respiration. In all these respects we see little difference between the nerve action in insects and ourselves.

I referred to the brain or the cephalic ganglia of insects. When this is uncovered, as shown by Dujardin, it shows well-marked

convolution. That it is no inferior organ is shown from the fact that, in proportion to the body of the worker bee, it is as 1 to 174; while in the ant, which some have claimed to be the highest of insects, it is as 1 to 286. In man the proportion is about 1 to 40, so we see that the brain of the bee is no mean organ, even when size is considered. Its convolutions add to its effectiveness. As is well known, only the higher vertebrates have convolutions to the brain. The same is true of insects. The convolutions show most in ants, wasps, and bees. For this reason I have no hesitation in considering these animals the highest insects of the animal world, and so I feel there is good warrant for placing the order *Hymenoptera* as the highest of the orders in the insect world.

From what has been said of the anatomy of the nerve system, we are not surprised at the varied economy of our pets of the hive. As we know, they have a wondrous life history. In habits and instincts, the bee and ant are in many ways the equal of even the highest of animals. Every working bee-keeper is so familiar with these in the bee that it is not necessary here to call attention to them.



I have had the same experience with "two-story" cells that Dr. Miller mentions on page 1416. In fact, I wrote of it in *GLEANINGS* some years ago. I have repeatedly exposed such combs outdoors when robbers were active, but never knew the under cell of honey to be uncapped. But his observation that cells with sunken caps will also be let alone is new to me.

Some have said that their experience with honey vinegar has been unsatisfactory because of its poor quality. It may be that a strong-flavored honey like buckwheat will not make good vinegar, or it may be that the poor quality has been due to getting the vinegar started with the wrong kind of ferment. It is well known to those who have investigated carefully the subject of butter, cheese, and other food products, that the flavor depends on the kind of bacteria developing it, and that often a good article is spoiled in spite of the maker's care, simply because he did not have the right kind of "seed" if we may use such an expression in regard to these bacterial ferments that develop flavor. The honey vinegar that I have made from alfalfa and clover honey, even that which has been boiled, is certainly of good quality

—superior, in my opinion, to any cider vinegar.

HONEY OUTPUT OF COLORADO.

An article in a Denver paper claims for Colorado the lead in honey production this year, with 41 carloads, whereas California produced but fifteen. This honey was produced in the following localities. Fort Collins, one car; Berthoud one; Longmont five; Loveland one; Denver five; Sterling one; Platteville one; Boulder two, and the Arkansas Valley two, with scattering amounts sufficient to make up 23 carloads for the eastern side of the mountains. For the western slope, the estimate is as follows: Southwestern Colorado, one car; Montezuma Co., one; Montrose Co., five; Delta Co., five; Mesa and Garfield Counties, six cars—a total of 18 cars for the western slope. I can not vouch for the correctness of all these figures, but one dealer told me he had bought thirteen carloads of Colorado comb honey this season.

HORIZONTALLY DIVISIBLE BROOD-CHAMBERS.

The article by C. P. Dadant in the Sept. 1st issue stirred me up somewhat, and the editor's request for contributions on the subject made it an inviting field for discussion; but lack of time, owing to an accident to one of my eyes, that kept me from doing much work for nearly a month, made it difficult for me to keep "up to date." The testimony of an experienced bee-keeper like Mr. Dadant, with his father's experience before him, carries weight. To some it will appear more weighty than it really is, because they will consider that the elder Dadant had used the divisible-brood-chamber hives and had discarded them in favor of the deep frames. We must remember, though, that the hives he discarded were not movable-frame hives, and were open to nearly all the objections which the practical bee-keeper finds in the ordinary box hive. It is, possibly, owing to this cause that he did not learn to use the shallow hives satisfactorily. The objections urged to the divisible hive are not new, with perhaps one exception—that is, that the bees would often desert one of the stories of the hive entirely. As I have almost never had this experience with double brood-chambers I can not but think there was something in the construction of the hives that is responsible for this. Possibly it was the fact that three stories were used. I have seldom found any use for more than two stories, and three were generally unsatisfactory. It seems to suit the bees very well to have their brood-chamber divided into an upper and lower portion. This occurs quite naturally. But any further division of the lower part of the brood-chamber, except with very small hives, frequently results in a desertion of the lower part of the hive. This is the case not only with the shallow frames, but I used to have the same trouble when tiering up Langstroth frames without queen-excluders. I would frequently find in the fall that the brood-nest was in one of the upper stories, with

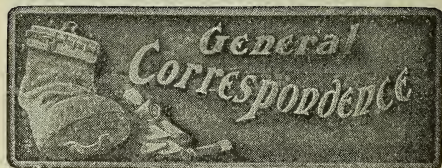
the lower ones containing only empty combs. His next objection is that there are more frames to handle. This looks plausible, but in practice it hardly holds good. Even when it becomes necessary to handle frames, when proper methods are used it is but seldom that any more frames have to be handled than with the larger ones, and these are so much smaller and easier to handle that it is really a saving of time and labor to have the hive divided into two sets of frames. Thus, early in the spring we know that nearly all the honey, the brood, and the queen are in the upper story. We may simply lift it off the lower story and examine it as if it were a complete hive, not paying any attention to the frames of the lower story. In the latter part of the season we know that most of the honey is in the upper half of the hive, and the most of the brood, with the queen, is in the lower story; and if we wish to examine the brood we simply lift off the upper story and set it aside, having to handle separately only the comparatively light frames of the lower story. If it were not for foul brood, I would but very seldom handle the brood-frames at all. I can find the queen by easier methods than by looking for her on the combs. It is an advantage here to inspect the brood frequently, in order to detect disease as soon as possible, so that I do not use these easier methods as much as I would otherwise, but hunt up the queen in the time-honored way. A proper knowledge of conditions in connection with a divisible brood-chamber enables me in most cases to find her without looking over more than one of the sets of frames. Queen-cells are found, to an extent sufficient for the requirements of most practical bee-keepers, very much easier in the divisible-brood-chamber hive by simply prying the stories apart and tipping the upper one back. It is but very seldom that I want to overhaul frames to look for queen-cells.

Next comes the question of wintering, and here Mr. Dadant falls into the common error of assuming that the divisible-brood-chamber hive is a shallow hive. On the contrary, it is a deep hive—as ordinarily used, deeper than the Langstroth. Mine, I believe, are exactly the same depth as the Dadant. Moreover, it is in the best possible shape for good wintering. Right through the center of the hive, and just below a sufficient amount of stores for wintering, is a passage giving free communication to all parts of the hive and making it easy for the bees to form and maintain the shape of a ball, which, as he says, is essential for the best wintering. For about twenty years I have had bees in both Langstroth hives and the six-inch double-brood-chamber hives, and those in the double brood-chambers winter best and build up better in the spring than those on Langstroth frames. There have been exceptions to this, of course, but that is the rule.

The argument that the queen is less hindered in her laying in a deep frame is all right theoretically; but in practice I find, as I said before, colonies build up better in the double set of shallow frames than in the

Langstroth frame. I have never used on any extended scale the frame Mr. Dadant recommends, except for a part of one season, so I can not compare them with that. I can account for this partly in this way. The queen is, perhaps, held back slightly at one period of her laying, making her fill the upper story with brood more compactly than she otherwise would. Then when she breaks over into the lower story she has a good force of nurse bees to accompany her, and with an abundance of empty combs she soon makes up for lost time.

As to the argument that the single set of frames permits a more gradual enlargement of the brood-chamber, I want to say that I long ago quit fussing with the brood-chamber in this way. It may sometimes be made profitable, but in the long run it does not pay. But if one wants to do it he may, by the use of division-boards or dummies, enlarge or contract the double brood-chamber about as easily and even more gradually than he can the single one. I do not consider that I am any less indebted to Langstroth because I use a double brood-chamber. I am using the Langstroth principle in my frames, even though they are shallower than the ones he used, and at fixed distances instead of loose.



INSPECTORS' MEETING.

A Report of One of the Most Important Meetings ever Held in the Interests of Apiculture; the Scientific and Practical Side of Bee Diseases.

The meeting of bee inspectors, called at San Antonio, Texas, for November 12, by the committee consisting of N. E. France, W. Z. Hutchinson, and Dr. E. F. Phillips, has come and gone. The attendance of about fifty persons represented the whole country. No one who attended thought the time ill spent. On the contrary, every one there felt at the close of the afternoon session that it was a day most profitably passed; in fact, many expressed themselves that it was the best bee meeting at which it had ever been their privilege to be present.

Dr. Phillips, of the Bureau of Entomology, Department of Agriculture, Washington, D. C., called the meeting to order, and in his opening remarks gave the history of European foul brood in this country, and also gave a synopsis of the bee-disease work under consideration by the Bureau of Entomology. He then called upon Dr. G. F. White, of the Department of Agriculture, who gave an ex-

haustive description of the methods of working out disease germs. Beginning at the start he so carefully and fully explained his methods of work that all felt that he thoroughly understood every detail in the investigation.

Dr. White said, in part, "If your cattle were being poisoned in the pasture, and your neighbor's cattle were not, you would make a careful survey of your neighbor's farm and see what plants were growing in his pasture. Then you would make an examination of your own farm, and would subtract the plants found in your neighbor's pasture from those found in yours, and those left in your own lot you would suspect as being the ones causing the poisoning. It is so with the investigation of a disease. A germ is a plant, and we study the flora of the healthy apiary and also of the diseased apiary, and by this process of elimination, and by the examination of a great many specimens, we arrive at the cause of the disease."

The European foul brood is caused by *Bacillus alvei*, described by Cheyne, and published in 1885. The cause of American foul brood is found to be a germ hitherto undescribed, but called by Dr. White *Bacillus larvæ*. To isolate this germ Dr. White used a medium the foundation of which was a bouillon made from the larvæ of the bees. No one else ever used this medium, and so no one else ever discovered the cause of American foul brood.

These germs are slender rod-like bodies that grow in length and finally break into two individuals. This division occurs every 30 minutes, so that, beginning with one, in half an hour you will have 2; in one hour, 4; in one and a half hours, 8; in two hours, 16; two and a half hours, 32; three hours, 64; three and a half hours, 128; and in four hours, 256 individuals. When the larva dies the germ goes into the spore or resting stage. It begins to thicken in the center, or near one end, and finally becomes a spherical body. This spore form is the resistant form, and is the one which we have to fight in the field.

Dr. White then explained in detail the methods used in isolating one germ and in making cultures for study. He also explained how the different media, or soils, were made, and how one germ would show a certain character on one medium or soil (for the medium is to the germ what the soil is to the plant), while another germ would show an entirely different character. So by taking many different kinds of media, and studying each organism on each medium, it is possible to identify them.

Both American and European foul brood exist in Europe. These terms were given them because the European foul brood was worked out by Cheyne in Europe, and American foul brood was worked out in America. Many samples of pickled brood have been examined, but no cause has been found for it. This is also true of bee paralysis, and we are still in the dark as to the cause and treatment of these two diseases.

Dr. Phillips then gave a detailed descrip-

tion of American and European foul brood as it appears in the field. He stated that, when Cheyne made his investigations, he had, according to his own statement, but one specimen which was brought him by Cheshire. Since both diseases exist in Europe it is quite possible that the one specimen was what we now call European foul brood, especially since Cheyne describes the specimen as "watery." To the casual observer the diseases bear a similarity in appearance.

Dr. Phillips stated that, at the present time, European foul brood exists in New York, New Jersey, West Virginia, Connecticut, Massachusetts, Vermont, Pennsylvania, Ohio, Indiana, Illinois, and Michigan.

The European foul brood is usually the more virulent of the two diseases, but, on the other hand, sometimes disappears of its own accord. He then gave the history of bee-disease investigations, and, taking each investigator in turn, showed what was the probable cause which led him to arrive at his conclusions. It is interesting to note that the earliest theory was that a parasitic fly laid its eggs in the body of the diseased larva.

Dr. Phillips then announced three publications of the Bureau of Entomology: Technical Series, No. 14; "The Bacteria of the Apiary, with Special Reference to Bee Diseases," by Dr. G. F. White; Circular No. 79, "The Brood Diseases of Bees," by Dr. E. F. Phillips; and a reprint from Bulletin No. 61, Bureau of Entomology, entitled "State and Territorial Laws Relative to Foul Brood."

Mr. N. E. France, the veteran bee-disease inspector of America, then read a paper, the "History of Bee-disease Inspection in Wisconsin." This paper was one of the gems of the meeting. Mr. France stated that many apiaries where foul brood once existed, after having been treated, were the means of paying off the mortgage on the farm, or of building a new home for the owner. Other apiaries under different care, though once profitable, are now entirely wiped out or reduced to a few colonies.

Dr. Phillips read a paper from Mr. Charles Stewart, of New York, and also one from Mr. Fred Parker, of Lompoc, California. Both papers were valuable and interesting, and both clearly demonstrated the value of thorough and careful work on the part of the inspector.

Mr. J. M. Rankin, of the Bureau of Entomology, who is stationed at Chico, Cal., gave a short talk on the inspection on the Pacific coast. He stated that he did not know of a case of European foul brood in California, but that the American foul brood was much more virulent there than in the East or North. Few inspectors in California now recommend the shaking treatment, as the time required to treat the disease is of more value than the bees destroyed. The method fast coming into favor is that of boiling up the diseased bees and combs in a large tank. Bee inspectors, he said, are born, not made. It is an easy matter to learn to detect the disease and to effect a cure. Any man of ordinary intelligence can do this, but it is only a small

part of bee inspection. The difficult part lies in handling the bee-keeper, and, without antagonizing him, get him to comply with the law because he sees the advantage it brings him in so doing.

The practice of carrying an instrument with which to test the dead brood is not a good one. Such an instrument in the hands of an ordinary man is bound to spread infection. The best method is to carry a pocketful of wooden toothpicks, and, after testing a diseased cell, either push the toothpick into the comb to mark the spot, or drop it down the mouth of the smoker and dispose of it. "I do not yet know of one single inspector," said Mr. Rankin, "who is in the work for the money he is getting out of it. They have the good of the industry at heart, to the very last man. Some of them make mistakes, but they all deserve the hearty support of every bee-keeper and every journal. No one has a right to criticise them publicly. If he is incompetent, the law provides for his removal from office, and this should be done; but to publish criticisms on the mistakes of an inspector is to harm the industry willfully."

Mr. L. H. Scholl gave a talk on inspection in Texas and the methods employed. Shaking has not proved satisfactory, and the line they now work on is to sulphur the diseased colony at the entrance with a smoker and then burn the infected combs. Mr. Smith, inspector for Illinois, described his method of treatment which was, briefly, that of shaking once on starters of foundation, being careful not to allow any robbing or dripping of honey. He stated that, in nine out of every ten yards treated, he had been successful.

Mr. George W. York, editor of the *American Bee Journal*, then offered a motion that a telegram of thanks be sent to Dr. L. O. Howard, Chief of the Bureau of Entomology, as an expression of gratitude felt by the Inspectors of the United States for the assistance of his Bureau in the investigation of bee diseases. The motion was unanimously carried.

Dr. Phillips summed up the meeting in a few very interesting and instructive remarks. He stated that he thought it had been clearly demonstrated that no one treatment could be successful in all localities and under all circumstances. The treatment must be adapted to the locality and the surrounding conditions.

All who were privileged to attend the meeting felt that it was a day most profitably spent, and that such meetings should continue. Bee inspection must become a science, and the contact of one inspector with another, comparing methods and conditions, can not but broaden him and better fit him for one of the most important of all branches of apicultural work.

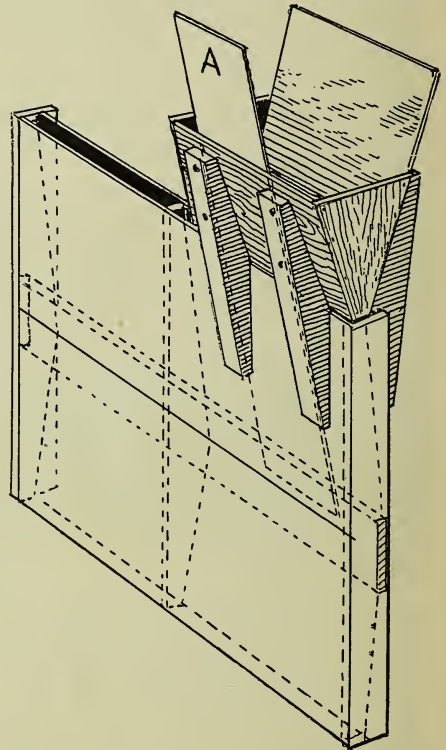
J. M. R.
Chico, Cal.

[The intention of those in charge of this meeting was, I believe, to start a permanent organization of bee inspectors who should draw up a constitution, and hold regular meetings. The good resulting from such can hardly be estimated. GLEANINGS offers its columns for the use of the organization.—ED.]

HOW TO CONVERT A VENTILATED COVER INTO A CHAFF-PACKED COVER.

BY L. W. DARBY.

The ventilated gable cover, having only a $\frac{3}{8}$ -inch board over the bees, with cold air passing through, is not warm enough in winter; the space between upper and lower boards also affords ideal homes for spiders which prey upon the bee. These objections can be easily overcome by filling in the space with chaff or other packing. When the cov-



ers are already nailed together it is a problem to get the chaff into them through the opening at the sides. I managed mine in the following way: First, nail a narrow strip of wood over the opening on one side. Then with a little trough made to fit the mouth of the cover, proceed to sift in the chaff; and as it chokes in the narrow opening, press it through with a thin board, A, about $24 \times 6 \times \frac{1}{4}$ inch. When one half is full, slide the trough along and fill the other partition. Nail a strip of wood over the opening, and the operation is complete.

Hahndorf, South-Australia.

[The plan here shown would be perfectly feasible, and it would make the cover warmer in winter, no doubt. Whether it would be any better or worse in summer I could not say.—ED.]

CELLAR WINTERING.

Is Moisture a Detriment or a Benefit? a Case Where Many Colonies Died Because of a Lack of Moisture; Disturbance Detrimental; Mid-winter Flights not Advised: Essentials to Good Wintering in a Bee Cellar.

BY E. W. ALEXANDER.

During the last few years there has been quite a change in the opinion of many bee-keepers on this particular point in wintering their bees. There is one thing, however, that we can all agree on; and that is, a wet cellar, with poor ventilation and a low temperature, is the worst place that bees can possibly be put in to winter; and some of us have found out, from long and costly experience, that a wet cellar, if properly ventilated, and kept at a temperature varying only from 44 to 48 degrees, is the best place that can possibly be made for perfect wintering.

With these dearly learned facts fresh in our minds, a year ago we built a model bee-cellar, 24×40 feet in size, which will give ample room for 1000 colonies, and at the same time give us a walk through the center from one end to the other. This is very handy in putting them in, in the fall, or taking them out in the spring; but its principal value is allowing a circulation of fresh air through the center of the cellar. The accompanying photos show a part of this cellar with the hives in their place. In order to show the hives on each side of the alleyway we made two photos of it, and then it shows only about half the length of the cellar, as there were 25 hives in a row, or 100 hives in a tier. You will notice that we remove the bottom-boards from our hives, and set them directly over each other, with four one-inch blocks between the hives. They rest on racks 8 inches high from the floor, which is covered with about 3 inches of chaff or planer-shavings. This makes a nice covering to the floor, and enables us to walk among the hives without making any noise or jarring them in the least. It also prevents smashing any bees on the floor, which makes it much easier to clean up after they are taken out in the spring. The under course of hives rests on the cleats of a bottom-board turned wrong side up. This gives ten inches of space from the under part of the lower hive to the floor, which allows a fine chance for fresh air to circulate over the bottom of the whole cellar. You will also notice that, where we have left the under cover on, we raise it from the hive and put a piece of section under it, forming a little crack for the foul air in the hive to pass off. But we prefer a piece of light canvas over the top without the under cover on. In order to test this thoroughly, last winter we left some hives with both canvas and undercover on, as you will notice in the photo.

This cellar was built late last fall, and the walls were laid up with stone and Portland cement. It is 6½ feet between floors, and has about a foot of space under the floor, which is of matched lumber. Under this are two

drains which convey water out all winter. The walls were very wet during the whole winter, as we had no time for them to dry, putting the bees in only one week after they were finished. Then in addition to these wet walls we put a building over it of green lumber, with a roof of galvanized iron. The floor over the cellar was of matched lumber, and double, with building paper between. This kept the cellar very warm with so many colonies in it; but with the perfect ventilation we gave it the bees came through the winter in as fine condition as I ever saw bees wintered, and only 2 hives out of 725 showed a spot of dysentery, although the bees were in the cellar from the 11th to the 14th of November until April 18th to the 26th before the last were taken out.

You may think this quite different from what I have recommended—that is, taking them all out at one time, and that at night; but from April 7 to April 16 I was not expected to live from one hour to another, and consequently the bees got but little attention during that time.

Last winter we had very changeable weather here. The temperature outdoors varied from 20 degrees below zero to 72 above—a variation of 92 degrees—while in the cellar it changed only from 44 degrees to 52, or a variation of 8 degrees. This 44-degree temperature inside lasted only about 24 hours, and was caused by a temperature of 20 below zero outside for two days, and the wind blowing a perfect gale. We kept a thermometer in the cellar, and could seldom find the temperature change more than one degree either way from 46.

In speaking of moisture in our cellar I often think of a bit of experience I had many years ago. I put 250 colonies in the driest cellar I ever saw. It was under a dwelling-house where two fires were kept burning nearly all the time. A short time after we put the bees in they became very uneasy, many leaving their hives and flying about the room. I had made a large tight room inside the cellar, of matched lumber, and put a plank floor in it. I kept the temperature about 45 degrees, but still the bees became more and more restless, and, when taken out in the spring, I shoveled up 14½ bushels of dead bees. That was the worst wintering I ever had, and it was a sight to see those that lived through the winter go to wet places after water as soon as they had a chance to fly. It seemed as if every bee went for water before it returned to its hive. Their honey was so dry and gummy that the bees could hardly eat it until it had been moistened with the water they got outside. The dead bees on the floor were so dry that, if you gave a handful a squeeze, they would crumble up almost as fine as corn meal.

Since my experience that winter I have changed my mind very much in regard to wintering bees in a dry cellar. The best success we have ever had was in cellars where there was running water, and the temperature kept at from 45 to 48 degrees. Many years ago, when father Quinby used to

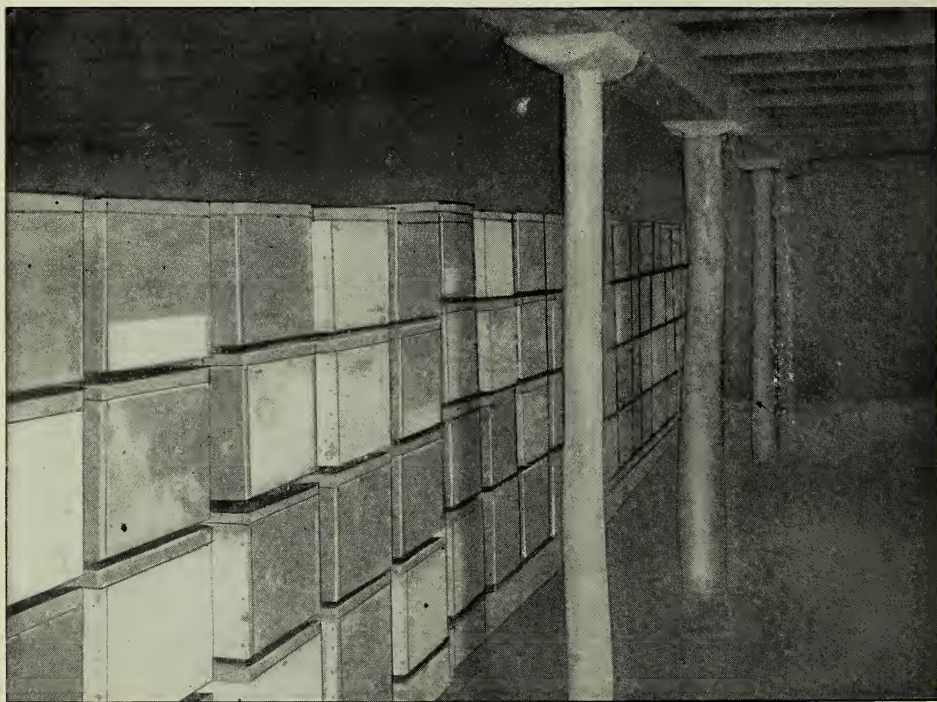
meet with us at our conventions, this wintering question was frequently brought up; and it was the opinion of us all at that time that, if a hive were made with double walls, and well protected on the top so the bees could keep the inside of their hive warm at all times, then they would winter well in a cellar at a temperature just above the freezing-point. But if we used single-walled hives with their bottom-boards removed, and on top had only a piece of cloth over the bees, then we must keep our cellars at from 45 to 48 degrees temperature, otherwise we might expect to have our bees somewhat affected with dysentery long before spring; and I am still of the opinion that the construction of the hives we use has much to do with the necessary temperature of our bee-cellars. Two very important requirements are perfect quiet and total darkness. These we can have much better in a cellar built in a side hill, expressly for our bees, than we can possibly have under our dwelling-houses. I think the amount of honey that is saved where bees are kept perfectly quiet will go a long way in three or four years toward paying the expense of building a special cellar.

Shortly after putting our bees away last fall I noticed a small bunch had gathered on top of one of the upper hives directly over the cluster. There was only a piece of canvas between the cluster in the hive and this little bunch on top. The canvas was well coated with propolis on the under side, and

was tight all around, and had no holes in it so one bee could feed another, but still they lived without any thing to eat until the 10th of January, when I disturbed them so that they scattered themselves over the hive, and some crawled down and in at the bottom. I think there were about 30 bees in this little bunch, and I am sure they had nothing to eat for nearly two months unless their honey-sacs were full when they clustered on top. I speak of this incident to show that, if our bees can be kept at a proper temperature, and perfectly quiet, and so dark that the whole winter seems like one long night, it requires but little honey to take them through the time that they are confined in the cellar.

Now in regard to giving them a mid-winter flight, I am not at all in favor of it unless they are suffering with the dysentery caused either by improper food or too low a temperature and bad ventilation. Several times I have set some out for a midwinter flight on a nice day, but usually lost about all that were so treated. The principal trouble is that, after they are returned to the cellar, they never again quiet down and form a compact cluster as they do if not disturbed.

Last winter, about Feb. 1, we thought it best to put mats on about 200 colonies that had been left with the under covers on; and, although we had the floor covered with about three inches of chaff, as we always do to prevent any jar or noise when going into the cellar, and we handled them as carefully as



E. W. ALEXANDER'S 'BEE-CELLAR; RIGHT SIDE.

possible with but little light, it disturbed these colonies so that they were quite uneasy for the rest of the winter, and wasted more than twice as much as the bees the other hives did that were not disturbed. Another thing I wish to speak of in connection with wintering is this:

Many leave their bees out too late in the fall. Last fall we put 300 colonies in our new cellar, Nov. 11, and they had had no good chance to fly for over two weeks. The 12th of November was a warm bright day, and the 425 colonies left in the yard had a good flight all day. These we put into the cellar on the 14th; and when taken out in the spring they were in no way any better than those put in on the 11th, although they had had a fine flight some three weeks later than the others; so don't leave them out to waste away, as they always do with these cold nights of early winter. If we would all realize the importance of having our bees well prepared for winter early in the season, and then be careful and not disturb them any more than can possibly be prevented until they are carried out of their winter quarters in the spring, our winter and spring losses will be much smaller than they usually are.

I shall have to make two articles of this wintering subject, and in my next I will give you some photos of the building we made over our bee-cellar, and will take up this subject of ventilation, showing how easily this

cellar can be well ventilated, and at the same time not disturb the bees in the least. When our bee-cellars can be ventilated in the proper way it is one of the most essential things connected with successful wintering. But when done as it frequently is, it is the ruination of thousands of colonies, being one of the principal causes of spring dwindling in its worst form. So when you build a bee-cellar don't be afraid of a little extra labor or expense, but make both it and your store-room for the thousand and one things necessary in a large apiary as near perfect as possible; then you will find that you can save many steps and receive better results in the end.

Delanson, N. Y.

[This is one of the best articles we ever published on cellar wintering, in my opinion; and I say this, even though some of its teachings may run counter to some things I have said on the same subject.

In the first paragraph Mr. Alexander speaks of the fact that a wet cellar with a low temperature, with poor ventilation, is the worst place bees can be kept for wintering, and we all agree with him on that proposition; and yet, knowing that fact, many beekeepers are unable to control the temperature, and the result is disaster.

On the other hand our correspondent says a wet cellar, if properly ventilated, and kept



E. W. ALEXANDER'S BEE CELLAR, LEFT SIDE; THE WHOLE CELLAR WILL HOLD 725 COLONIES.

at a temperature of from 44 to 48 degrees, is the very best place to winter bees. I agree with him in the matter of ventilation and temperature, and I also agree with him *if* he does not mean to have his cellar *too* wet. The term "wet" as applied to a cellar might mean one slightly damp, and another one with pools of water standing on a muddy floor. I can hardly believe that Mr. Alexander means this. The average cellar will not be absolutely dry, if under ground, where a lot of bees are confined. To my notion, if we specify a *dry* cellar we shall get one wet enough to conform to the requirements of our correspondent. A hundred colonies of bees, for example, in a cellar 15×20, will give off a large amount of moisture through their breath. This moisture will condense against the sides of the hives and against the sides of the cellar or any surface cooler than the cluster of bees.

It is not clear just how much ventilation Mr. Alexander allows. I infer, however, he does not change the air in the cellar very much, but leaves the hives themselves so open that there is a circulation of air in the cellar, or from within the hive to without the hive.

With regard to disturbance, what Mr. Alexander says is true, and yet it may be a little hard to harmonize his statements with the fact that our shop-cellar bees have all kinds of racket above them and yet they winter nicely. Right over our cellar where our bees are, there is the rumbling of machinery and the dropping every now and then of a heavy weight or the trundling of a heavy truck; and the vibration of the building, and I might say of the foundation, is continuous. But here is where the explanation lies: The *continuous* noise does not disturb bees nor human beings like a *sudden* shock after continuous quiet. I have been in cellars, which, on entering as carefully as I might, caused no little disturbance on the part of the bees; and on the other hand we could go into *our* cellar and wheel heavy trucks through it all day, and the bees would scarcely notice it, because they have become accustomed to it. I suspect the case is something like this: My dwellinghouse is located close to our factory, and only about 500 or 600 feet from the B. & O. Railroad, and 700 or 800 yards from an east and west road, the Northern Ohio, and on these roads trains are snorting through at almost every hour of the day, and at times in the night; and yet those of us who are accustomed to it very seldom notice or hear it. Another fact: Some thirty years ago I used to sleep in our factory when we were running night and day. My room was directly over several buzz-saws and a planer; but very soon I became accustomed to the noise so that it did

not disturb me. Going back to the bees in the cellar, I suspect that the *occasional* romping of children directly over a bee-cellar would cause more disturbance than if the children romped on that floor every hour of the day.

I notice that Mr. Alexander does not advise winter flights except toward spring, and even then only when the bees become uneasy or affected with dysentery. I agree exactly with him here, and his recommendation has been right along with our recent practice. Whenever bees become uneasy it has been our experience that a good fly restores them to quiet.

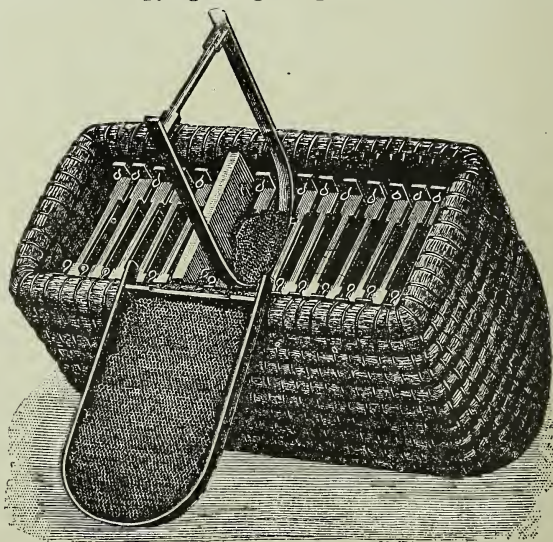
This whole article is based on an extensive and long experience, and it will bear careful reading, both on the part of the veteran and the beginner in the business.—Ed.]

GRAVENHORST'S SYSTEM IN GERMANY.

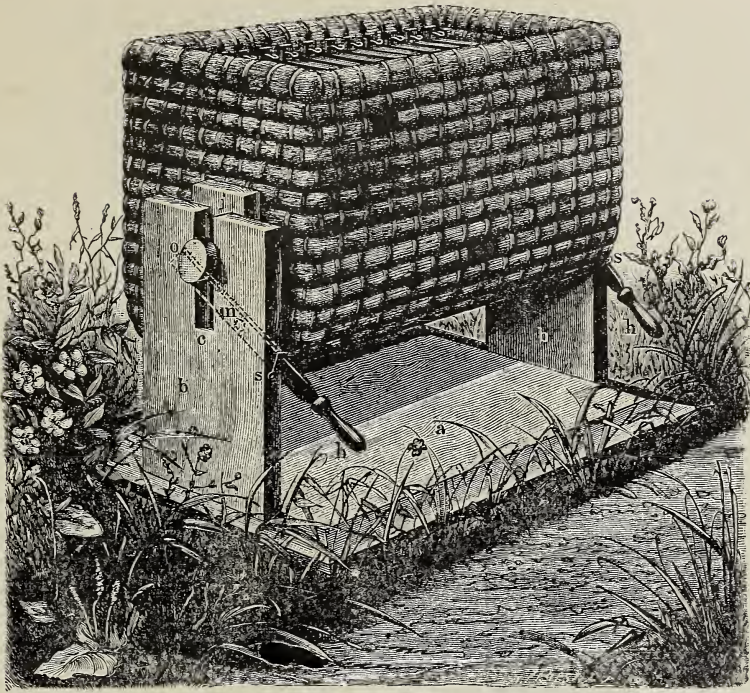
The Peculiar Form of his Hive and Frame.

BY W. K. MORRISON.

Germany, the land of modern science, Wagnerian music, and lager beer, is very prolific in apicultural literature, which we naturally expect in a country of apiaries and printing-presses. Even if they are numerous, these bee-books are by no means vain repetitions of each other. On the contrary, many of them are quite original, particularly in the science of *Apis mellifica*, where our friends stand preëminent. If any criticism is in order it might be stated the Germanic bee-authorities are too self-centered, not copying the good points of American and



GRAVENHORST HIVE INVERTED, SHOWING HOW THE COMBS ARE REMOVED (BOTTOM UPWARD), AND THEIR PECULIAR SHAPE.



A SPECIAL INVERTING HIVE-STAND FOR THE GRAVENHORST HIVE.

French bee management. Baron Berlepsch succeeded in introducing the American idea of a movable-comb frame at an early date, and Dzierzon himself advocated the hanging-frame idea when once converted, though he never made much use of the bee-space and the movable roof-board. The latter he fought tenaciously, claiming it was bad for the bees in winter and spring. But the man who did more than any one else in Germany to popularize the movable-frame system of management was Mr. Gravenhorst, for many years editor of a bee paper, and author of a popular work on bee culture, with the title of "The Practical Imker." With considerable inventive faculty he very cleverly adapted the movable idea to the ordinary straw hive, and thus paved the way for greater things to come. Mr. Gravenhorst carefully studied the writings of the most celebrated of American writers, such as Langstroth, Quinby, Cook, Root, Heddon, and others, and gave them due credit for their work. Being endowed with a considerable amount of what we call "horse sense" he foresaw that he would have to suit the movable-frame idea to the straw hive. The illustrations serve to show how admirably he succeeded. No one but a plodding German would have thought of making a frame to suit so peculiarly shaped a construction as a dome-shaped straw hive; yet the frames are readily removable, and a broad frame is in use of the same sort in which sections are placed for fancy comb honey. Just think of it! square $4\frac{1}{2} \times 4\frac{1}{2}$ sec-

tions out of a straw hive of the classical school of bee-keeping! Dzierzon succeeded in constructing a very fair hive by combining wood and straw—a sort of hybrid hive. Of course, the work of making these bent-wood frames is considerable, but that does not deter the Germans at all; and as they have no manufacturer to abuse, nothing can be said against the cost of them.

Of course, these hives are worked on the long-idea-hive system advocated by Mr. Poppleton and others; that is to say, the honey is stored at the sides, not on the top. It may be claimed such a hive will give poor results in a good season as compared with the "tiering-up" hives; but over against that its advocates would say use more bees and have more hives *a la* Hutchinson.

It will be observed that Mr. Gravenhorst learned something from Mr. J. M. Shuck, of Iowa, who had an arrangement for inverting his hives similar to the one here shown, or perhaps Mr. Shuck learned something from the Germans. Evidently the Germans find these hives get rather heavy, and require the assistance of a labor-saving device. This is one more argument in favor of the shallow hive, which the Germans know not.

The construction of the straw body is very ingenious, as it still retains the original aspect of the classic hive, and yet adapts itself to movable frames. Mr. Gravenhorst went further, and invented "a sort of hay-rack attachment" which was used for moving the hives. I am sorry to say this is not shown,

as it would be very interesting just now when derricks for bee-hives are up for consideration. Some may be disposed to criticise these arrangements for the pursuit of bee-keeping; but they are much superior to the log-gum hive of the South, and, what is more to the point, make for better things. Mr. Gravenhorst illustrates straw hives, which are square, and with single frames



THE MANNER OF REMOVING THE FRAMES FROM GRAVENHORST'S HIVE.

containing two combs, one above the other, but still retaining the fixed-roof idea, and allowing the frames to be removed only from the bottom, as the idea that a movable roof in a hive is bad seems to be part of a German bee-keeper, and has retarded the progress of hive-making in continental Europe very much.

Progress has been made, however, as a result of Mr. Gravenhorst's work, and great changes are slowly evolving all along the line. In German-speaking Switzerland a new bee-paper has appeared, edited by the Rev. Mr. Streauli, with the openly avowed purpose of converting the Germanic race (80 millions) to the American style of bee-keeping, and commenced with a translation of Mr. Swarthmore's latest epics on the subject of queen-rearing. It looks like carrying coal to Newcastle.

There is a bee paper published in Russia advocating American methods of apiculture which, together with the above and the Parisian Gleanings, ought to make great changes in the trend of bee-keeping thought in Europe, and these old-time inventions will pass away.

SUCCESSFUL BEE-KEEPING UNDER DIFFICULTIES.

A Bee-keeper who, Without the Use of his Limbs, is Able to Hunt Bee-trees, Hive Swarms, and Do All the Work About an Apiary.

BY JESSE G. COCKRAM.

In my fifth year, in June, 1876, I was stricken with paralysis in my feet and legs. I have never walked since. When I was about 14 years of age I watched some bees getting water at my father's spring, and traced them into an ivy hill. I crawled over into the woods, the ivy so thick in places I could hardly get through it. I crawled on in search of the bees for about half a day before I found them.

At last I saw the bees working in and out of an oak limb. I surely was glad to find them. I crawled back to the house as soon as I could, to tell my mother the glad news. I had the tree cut, but it was an old stand. The comb was almost black, and only a few cells of honey in it. The bees had dwindled down to but half a gallon. This colony never did me any good. I tell you I have had the bee-fever bad. I craved to own some bees or have them where I could see them work. I enjoyed sitting and watching them work, in and out of the old-fashioned gum. I did not know then any thing about the frame hive that I now use.

I earned enough money so that, in 1894, I bought four stands, in box hives, and I kept my bees in round gums and box hives until last year. Finally I concluded to buy some modern hives to put my colonies in, any way, and try them. The new way of keeping bees as far exceeds the old as the thrashing of grain by machinery exceeds the old flail.

I have climbed a few low trees, and hived a few swarms; but I almost always have help. Some people don't believe I can climb a tree without the use of legs; but I've done this many times. I am strong in my arms and hands, back, etc.

I have the A B C of Bee Culture, and have read and studied it. I am also taking GLEANINGS. If any old-fashioned bee-keeper thinks he can get along as well without bee books and papers as he can with them, he is sadly mistaken unless he would simply own the bees and not be benefited by their teachings.

I have given an outside view of my shop, and myself in the condition that I crawl about in, and work with my bees, etc., and also an inside view of myself at the shoe trade.

Woolwine, Va.

[The world over admires and commends the man who, in spite of environment or physical disabilities, overcomes them and helps in the great work of making the world richer and better. Most men, afflicted as is our friend Cockram, would have given up in despair. But he apparently knows no obstacle too great for him to surmount—at least not in bee-keeping. Climbing a bee-tree



A BEE-KEEPER WHO HAS LOST THE USE OF HIS LEGS, BUT IS STILL A BEE-TREE HUNTER.



JESSE G. COCKRAM, A BEE-KEEPER WHOSE LIMBS ARE PARALYZED, BUT IS ABLE TO DO ALL THE WORK ABOUT AN APIARY.



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NATIONAL BEE - KEEPERS



NATIONAL BEE-KEEPERS' ASSOCIATION, NOVEMBER 8-10, 1906, SAN ANTONIO, TEXAS.

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 48 Udo Toepperwein, San Antonio, Texas.
 49 I. A. Davis, San Antonio, Texas.
 50 S. E. McBurney, Zephyr, Texas.

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 52 Louis Blediger, LaCoste, Texas.
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 97 G. L. Johnson, San Antonio, Texas.
 98 C. B. Bantston, Milano, Texas.
 99 S. W. Kemmer, San Antonio, Texas.
 100 Daniel Wurth, San Antonio, Texas.

101 J. Q. Smith, Lincoln, Ill.
 102 C. W. Scott, Beeville, Texas.
 103 Lena Hyde, Floresville, Texas.
 104 Grant Anderson, Sabin, Texas.
 105 W. H. Laws, Beeville, Texas.
 106 J. H. Kershaw, Abilene, Texas.
 107 V. G. Miller, Mathis, Texas.
 108 Geo. J. Elam, Marlin, Texas.
 109 L. Stachelhausen, Cibola, Texas.
 110 Mrs. Stachelhausen, Cibola, Texas.
 111 S. W. DeBord, Runge, Texas.
 112 J. W. Allen, Uvalde, Texas.
 113 Eloise Laws, Beeville, Texas.
 114 J. A. Simmons, Oakville, Texas.
 115 L. B. Smith, Rescue, Texas.
 116 R. W. Rogers, Lometa, Texas.
 117 D. C. Sulley, San Antonio, Texas.
 118 T. P. Robinson, Bartlett, Texas.
 119 Dr. J. B. Treon, Floresville, Texas.
 120 Mrs. Wm. Atchley, Beeville, Texas.
 121 J. M. Rankin, Chico, Cal.
 122 Dr. E. F. Phillips, Washinton, D. C.
 123 L. B. Wiseman, Floresville, Texas.
 124 Bryan Callahan, City Mayer, San Antonio, Tex.

without legs is *almost* like flying without wings. What couldn't *we* do if we only *tried*?

On page 228 of last year we gave a picture of Mr. Stephen Hill, a blind bee-keeper who, not to be outdone on account of entire lack of sight, goes at the business and makes a success of it. There are many parallels in history, but perhaps the most notable, in apiculture at least, was the blind Huber. Certainly the world is richer and wiser for his work. No man with two eyes ever gave to the world more facts about bee life than Huber. All honor and praise to such men. I feel like taking off my hat to them; and as I look at these pictures of Mr. Cockram I wish I could shake his hand.—Ed.]

TIERING UP COLONIES DURING A POOR SEASON IN MICHIGAN.

The Advantages of a Shallow Brood-nest.

BY T. F. BINGHAM.

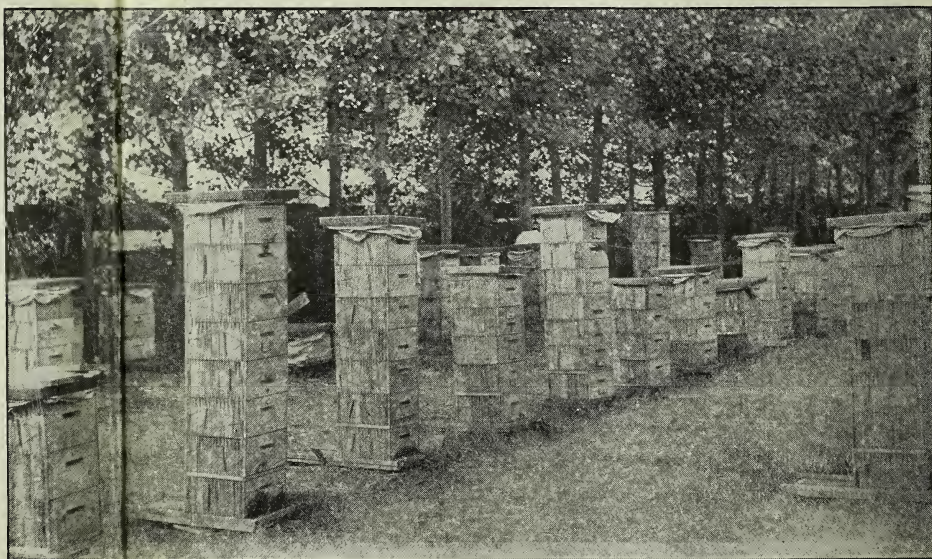
At the beginning of the apple bloom I had about 100 colonies. The spring was cold and windy. I lost all the tree bloom, and we came up to apple bloom with empty hives and about one-third the brood and bees we

It became evident that, for section honey, there was little hope if, indeed, there was hope in any course. I had an abundance of empty combs, and they had to be saved at all hazards, honey or no honey, bees or no bees.

As soon as the honey came from clover and raspberry the hives of empty combs were put on as fast as they were needed. Some colonies wanted few, some more, and, on the whole, all said empty combs were filled with honey. It was simply clover and raspberry—not a basswood blossom could be found. The bees gathered honey about two weeks, and sent off four prime swarms. There is about twice as much honey in the apiary as will be required to carry them through till June 1, 1907. At the time the photo was taken, all the hives were full as shown—not a set of frames to spare. I now have about 150 colonies to select 100 winter stocks from. The season was the poorest I ever knew.

Farwell, Mich.

[Mr. Bingham, of smoker fame, uses the shallowest brood-chamber of any bee-keeper in the country, and he has been using them for well-nigh forty years at least, with success and satisfaction. This shallow hive enables him to make a very *gradual* expansion of the hive, just enough to keep up with the



T. F. BINGHAM'S APIARY, FARWELL, MICH., SHOWING THE VALUE OF SHALLOW BROOD-NESTS FOR TIERING UP.

usually have; and the cold frosty period during the apple bloom destroyed that also. I had no honey; not half the usual number of bees in a colony, and they slowly increased, or, perhaps, more accurately speaking, held their own. We fed a few that were starving, and doubled those not likely to weather the doubtful period preceding the clover and raspberry bloom.

increased demands of the colony. The illustration shows how nicely this works out. Just notice that some colonies required only two extra brood-sections while others towered up to the height of their owner. There are great possibilities in tiering up, nor is the practice necessarily limited to shallow hives; but such hives are better adapted for the purpose.—Ed.]

WAX-RENDERING.

A Brief History of Different Methods, Including the Use of Wax-presses; the Hatch-Gemmil Press and What Can be Expected from it.

BY H. H. ROOT.

Some bee-keepers are not yet convinced of the superiority of a good wax-press for rendering wax from old combs, refuse from the solar extractor, etc. The principal reason for this is that they are sure that their own particular method wastes no wax. I want to say, however, that, from a good many tests made, I am satisfied that half of the wax in many cases is thrown away. It is next to impossible to tell very much concerning the amount of wax in refuse after it has become cold. It may look perfectly clean, and show no trace of wax, although it be broken up and examined carefully. For instance, one correspondent said that the cheese was as hard as a board—a fact which he seemed to think indicated that it had received so much pressure that surely no wax could be left, while, as a matter of fact, the more wax left in a cheese, the harder it is when cold. Another stated that the refuse was perfectly dry, and would shake out like ashes. While I think this would indicate that pretty thorough work had been done, yet, as I said before, very little can be determined from an examination of cold refuse. Without actually testing it, the best way, perhaps, to tell whether there is any wax left is to take a handful of refuse when it is hot, and squeeze it. If fine lines of wax appear along the creases between the fingers, it contains at least from eight to ten per cent of wax. The only way, then, to find the exact amount of wax remaining is to run the refuse through some form of press, and do the work thoroughly. Many bee-keepers place the combs in an old burlap sack, and immerse the sack

had been treated in this way by one of the largest producers in this country, and obtained 23 lbs. of pure wax, showing that in this one instance the method of rendering under hot water, without the proper amount of pressure, yielded, perhaps, less than two-thirds of the total amount of wax.

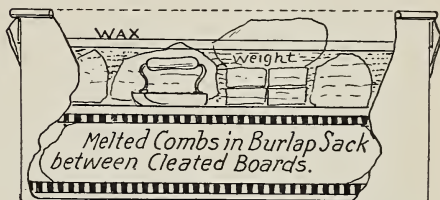


FIG. 2. Another crude and very wasteful method of extracting wax. This is a better way than that shown in Fig. 1.

The solar wax-extractor, while it is indispensable in an apiary, and possesses many advantages that need not be enumerated here, is hardly suitable for rendering old combs. The amount of loss from such varies from 25 to perhaps 40 per cent. When a few cappings are rendered, the amount of refuse left is usually quite small, and the waste may, therefore, be neglected. But if a great quantity of cappings is to be rendered, the refuse which comes from the solar had better be run through a good press.

I am sure that this method wastes more than most producers imagine, for wax of a most beautiful lemon color can be obtained from the blackest refuse in a solar extractor.

Since the wax-press is, without doubt, the most practicable extractor brought out thus far, when viewed from the standpoint of economy, we will now take up this part of the discussion.

WAX-PRESSES.

These may be divided into two classes—the first including any kind of press in which heat is applied to the slumgum during the pressing; and the second, all presses in which no heat is applied during the pressing. We will first consider briefly the heated presses including the hot-water press, in which great pressure is applied to combs immersed in hot water, and the steam-press in which the combs are enveloped in steam.

HOT-WATER PRESSES.

In these the pressure may be continued without the least danger of chilling the combs. This method has also a decided advantage in that the screw may be raised after having been turned down, and the cheese allowed to become saturated again with boiling water. The screw may then be lowered and this hot water forced out of the refuse, carrying with it more of the wax. This operation may be repeated as long as is found necessary by experience. It is thus seen that there is no disagreeable handling of the refuse until all the wax is out. Furthermore, all the work, if necessary, may be confined to the one tank.

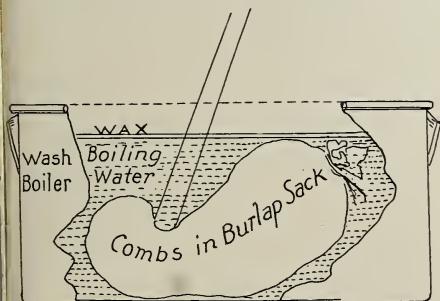


FIG. 1. A crude method of extracting wax from old combs, which wastes about 25 per cent.

a boiling water. This is punched with a stick, or covered with a slatted frame weighted down heavily so that the wax is forced out. In either case there is a waste on the average of about 25 per cent. Mr. Orel L. Lershisser, of Buffalo, N. Y., rendered, with his hot-water press, 85 lbs. of refuse which

Among the disadvantages of this method we may mention the poor quality of the wax. All the wax that I have obtained or seen from a hot-water press has been very dark, and had, therefore, to be refined if a good price were secured. In order to do rapid work with this press a large one must be used, for it takes considerable time to get the wax out; and the only way to do rapid work is to use a press of a large size. This makes the first cost very high. Furthermore, after the wax is out, there is the inconvenience of removing it from the surface of the water. It may be dipped off without much trouble, although this takes too much time, and is tedious work if all the wax is taken off. If any wax is left on the water, the refuse, when it is taken out in the sack, will absorb some of it. A better way is to have a very wide though shallow opening just below the level of the wax, and at the proper time allow the wax to run off through it. If this opening or gate is below the wax level, it would seem as though all of the wax and a little of the water would pass out through it, but such is not the case; and the only way to get all the wax off by this method is to introduce more hot water through a tube into the lower part of the press until all the wax overflows. Another way to separate the wax

spout, leaving nothing in the way above. When the refuse is ready to be taken out, cold water may be poured into the boiling water below the false bottom, and the generation of steam stopped.

One of the disadvantages of the steam method is that the wax is as dark-colored as that obtained from the hot-water press. Furthermore, if the screw be raised and removed entirely, the refuse has to be shaken up before the pressure is applied again. This must be repeated a number of times in order that all the wax, or, more properly speaking, all that it is practicable to obtain, is removed. The great trouble with steam-presses, and, in fact, with most wax-presses, is that the last ten per cent of wax comes out so slowly that the work is often hurried, and there may then be a loss of from five to ten per cent. In the steam-press, and also in the hot-water press, another melting-tank has to be used if rapid work is to be done.

THE HATCH-GEMMIL WAX-PRESS.

At the last convention of the National Beekeepers' Association, in 1905, Mr. C. A. Hatch, of Richland Center, Wis., convinced me that I ought to make a more thorough trial of the unheated press, which up to that time I had not tried extensively; therefore, for about six months I conducted a series of experiments with wax-presses, which were on a reasonably large scale, for I do not believe that one or two experiments with small quantities of comb prove anything at all. I have found that the unheated press, as ordinarily used, *wastes anywhere from 8 to 10 per cent of the wax*, but that this loss can be reduced to less than 3 or even 2 per cent, if the whole operation be repeated, and, contrary to my expectations, the entire time for the two meltings, including *two* pressings after each melting, enabled me to turn out beautiful yellow wax at the rate of from 7 to 10 lbs. an hour. There are some disadvantages, of course, but they are not serious, and, take it all in all, I am convinced that the unheated press deserves much more credit than it has yet received.

Before going on to describe in detail this unheated press, it may be well to glance back briefly over the history of its development. I believe that Mr. C. A. Hatch, of Wisconsin, first constructed a press embodying the principle. He used for a short time a press designed by W. W. Cary, of Massachusetts, in which the combs were pressed while submerged in hot water, but he believed that he could improve on this plan by applying the pressure in a different receptacle without the use of hot water during the pressing. While there may have been others who used a similar plan before this, Mr. Hatch is probably the first one in this country to bring it to the notice of the public. Later, Mr. F. A. Gemmil, of Ontario, Canada, also worked with such a press, and it finally came to be known as the Hatch-Gemmil wax-press. In experimenting with this press I have made some changes which, in my opinion, seemed to be necessary. Fig. 3 will show the original

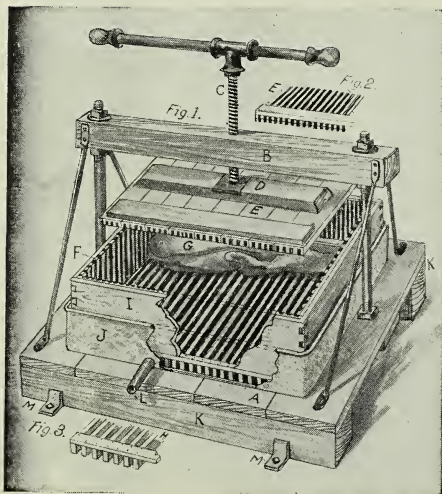


FIG. 3.—THE ORIGINAL HATCH WAX-PRESS.

This illustrates the general form of press that is now used by many bee-keepers all over this country.

from the water is to have a spout at the bottom of the tank and draw off almost all the water; then place another receptacle under the spout and allow the rest of the contents of the tank to pass into it. The pressure meanwhile should be kept on the refuse.

STEAM-PRESSES.

A steam-press has the advantage in this respect, that the wax will fall down below the refuse, and immediately pass out of the

Hatch-Gemmil wax-press, and Fig. 4 the same with the changes that have been made. In Fig. 4 it will be noticed that a round can constructed of tin is used instead of the square wooden box and tin tray shown in Fig. 3. The principal reason for this change is that it is easier to keep the cheese from bursting out sidewise when a round box or can is used, for the square box tends to bulge out in the middle, thus allowing the burlap to burst. If a round can is used, the pressure sidewise is always in a direction directly away from the center, and the horizontal pressure is thus equalized. Instead of the wooden cleats placed vertically around the sides of the can, a perforated metal, or, better, a heavy wire-cloth lining a little smaller than the outside tin can may be used, which if firmly riveted can not possibly give trouble. I am sure, too, that with the round can the cheeses do not chill so quickly as they do in the square box, for the reason that they are more compact, and there is always less chance for cold air to circulate around under the cheese. Mr. Hatch now uses two screws instead of one, for he believes that he can get more pressure with the two; but I have not found the two screws necessary, for one screw will exert more pressure than is needed, and is, besides, much easier and quicker to handle.

It will be noted in Fig. 4 that the screw extends down into a hole in the center of the cast-iron follower. If the screw simply rests on the top, the follower shows a great tendency to go down sidewise, especially if one is not exceedingly careful in placing the melted comb evenly in the can. It is easy to see that, when the follower does not go down straight, one side of the cheese is much thinner than the other, and the thicker part will be found to contain quite a good deal of wax after the work is done. With this arrangement, the follower must go down straight unless the screw bends, and I have never had any trouble from that source. The circular piece above the cheese must be cleated as shown, to aid the wax and water in running off.

If any one wishes to make this kind of press at home, a square box had better be used similar to that shown in Fig. 3 instead of the round can, but there must be some method of reinforcing the corners to keep them from bursting. If a tin-shop is near at hand, the round can will be found easier to make and more satisfactory afterward.

A bench-vise screw, or one similar, would probably be used in a home-made press as shown in Fig. 3. But to keep the cleated follower board from tipping when it goes down, a heavy block had better be bolted securely on top of the iron plate D. The screw

can then rest in a hole bored through the center of the block to the iron plate.

To be continued.

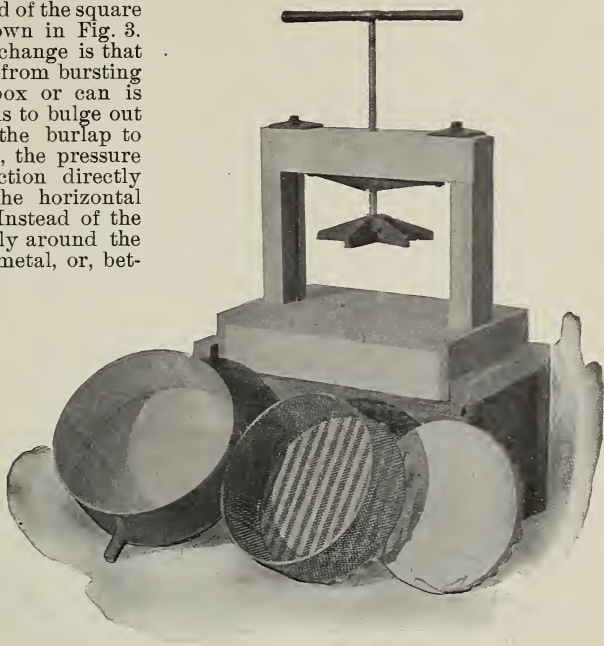


FIG. 4.—MODIFIED HATCH PRESS.

Showing the round pressing box or can instead of the square one as in Fig. 3.

HONEY NOT ARTIFICIAL.

How to Prove this Fact to the Satisfaction of Customers; a Name-stamp for Each Section.

BY PROF. H. A. SURFACE

A member of the Pennsylvania State Beekeepers' Association has recently written to me, asking what can be done to make the public understand that pure white honey is not artificial. In replying to him I said that I have had no difficulty in this regard in the vicinity of Harrisburg, for three reasons:

1. My apiary is situated along one of the prominent trolley lines where hundreds of persons see it daily.

2. This summer I gave a public demonstration in State Capitol Park, showing how to remove bees from a tree and transfer them to a hive. Thus people know that I have bees and am producing honey.

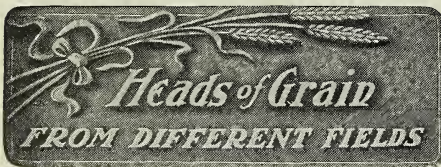
3. Upon each section of honey which I put on the market I stamp conspicuously, "Fancy Honey, Guaranteed. From the Camp Hill Apiaries, H. A. Surface, Proprietor, Camp Hill, Cumberland Co., Pa." Thus the name of the producer is on each package, however small, and his guarantee is there. I have no trouble whatever in selling this honey, and there are no evidences to cause people to think it is impure with

this guarantee. In fact, it is just what it is guaranteed to be—viz., “fancy honey.” To build up a trade, no other kind should be used. After a trade is established, poorer grades of honey may be sold, but should not be sold for “fancy.” After the people become interested in honey, and know something about its use, they will readily learn that there are different grades, and will then not be suspicious because some is light, some amber, and some dark.

A great deal has been said as to whether we should label our product “Pure Honey.” This appears inadvisable, because it carries with it the idea of the possibility of finding on the market such material as *impure* honey. In stamping on all of my sections the words “Fancy Honey,” and “Guaranteed,” I am guaranteeing this product to be of the grade known as “Fancy,” and since it is true that there are different grades of honey, this carries with it no implication of adulterated or impure honey. In my opinion this solves the problem of labels or brands, and at the same time does the producer justice by an advertisement of good material, and also gives the consumer a feeling of security in purchasing and using material produced by one whose name he knows.

My advice to every person producing material of any kind that is to be used by the public is to develop a market near his home, or as near as possible, and, by doing a strictly first-class business with high-grade goods, make a reputation that will at once secure for him prices above the average market price and relieve the product of the suspicion of impurity. A properly sustained reputation, in a region where a person is already known, should become one of a business man's most important assets.

Harrisburg, Pa.



THE VALUE OF ALSIKE CLOVER FOR BEES.

On page 230, in regard to the long-tongued bee, if the bee-keepers would sow more alsike clover they would not need to breed such bees, and they would get more honey. The alsike should be mixed half and half with red clover. The bees will work strongly on the alsike, and will carry the pollen from the alsike to the red clover; and if this method is kept up for a few years the red clover will make a good honey-plant. There is no better plant for honey than alsike clover, and the hay will make the best of feed for cows. With alsike clover the farmer gets three crops a year—two crops of fine hay and a crop of fine white honey. Alsike clo-

ver will not dry up like red clover. It will stay green. It is a good clover to sow with timothy. It is green when timothy is ready to cut, and will make a better feed for stock, and a fine pasture for summer.

Kewanee, Ill.

W. W. CAIN.

[The scheme you outline has been tried, but, so far as I know, without success. It is doubtful if it ever can be.—ED.]

HOW TO COMBAT BEE-BIRDS.

In some parts of the world bee-eating birds are dreaded by bee-keepers. Luckily the United States is not much troubled with their attentions. California bee-keepers suffer from them sometimes, and in Porto Rico there is the bee-martin which loves to hang around an apiary and pick off the bees as they return. In other parts of the tropics various species of birds prey on bees with more or less pertinacity and success. In the southern part of Europe, notably in Spain, the bee-eater (*Merops apiaster*) is a devoted and relentless enemy of the bee-keeper, gathering in large numbers to devour the bees. Virgil and other writers allude to this un-



pleasant pest of the apiary. The foregoing illustrates a very forcible method of dealing with these birds. They have a habit of perching by preference on a dead limb or wire to see better, probably, and this is their undoing. Wait till several are quietly settled, and then shoot. Even a poor shot can make a good job of it.

Medina, O.

W. K. MORRISON.

ALEXANDER'S ARTICLES APPRECIATED; HIS PLAN FOR BUILDING UP WEAK COLONIES A SUCCESS IN THE HANDS OF ANY THINKING MAN.

As an encouragement to those who intend to try the Alexander plan of uniting weak colonies to strong next spring, but who, after reading the unfavorable reports, page 1189, are undecided whether the plan will be a success for them or not, I will say that the plan is a success for every thinking bee-keeper who, before he tries it, reads the instructions carefully, not only once but several times, until he knows them by heart. There are some things in the Alexander treatment that *must* be carefully noted. He says: “As soon as they have some uncapped brood in their hives.” Now, it must be observed that there is unsealed brood in both hives or else the plan will be a failure; and, if I understand Mr. Stewart, p. 1190, that is the cause of his failure; for if there is unsealed brood the bees will not desert their brood-nest.

Mr. Snowden, probably, in placing the weak colonies over the strong, used smoke, or in some way started the bees fighting. The best way, I think, is to mark your weak colonies and get the strong ready by placing a queen-excluder on top under the cover, then wait till night, and quietly remove the cover of the strong colony, and carefully place the weak over it, but do not disturb the bees with smoke or in any other way. If you think your bees are too cross, use the following method that some one described in GLEANINGS:

"Over the queen-excluder place a piece of burlap or mosquito-wire, leaving it between the colonies for 48 hours; then remove it quietly, and the bees will not fight, and, by the way, this is a good way of getting rid of laying workers in a neglected colony. I would not advise feeding the upper colony, but, rather, give them a frame with honey before uniting; but if you think you have to, remember that Mr. Alexander tells us to give them only a few spoonfuls in a comb next to their brood; for if you give them more you will start the bees below robbing from the weak, and consequently you lose your queen.

I wish you would convey my thanks to Mr. Alexander for his splendid articles on simplified bee-keeping. CARL O. JORGENSEN.
Dorchester, Mass.

DID THE BEES MOVE THE EGGS?

I believe if our friend Stachelhausen could see what I saw in the spring of 1905 his skepticism with regard to eggs or larvæ being moved by the bees would be removed. That spring I purchased some queens from a Southern breeder, receiving them the 5th of May, and introduced them in colonies of black bees. On examining the colonies on the 11th I found a queen-cell on an empty comb containing a larva about two days old. The cell was on the opposite side of the comb from the brood-nest. I cut off the cell, as I wanted them to, accept the queen. In looking over them about ten days later I found about half of the brood in the hive was drones, and, to my surprise, they had two nice queen-cells on an empty frame with an empty comb between it and the brood-nest. I hatched these cells in a nucleus. They were from the Italian queen. I did not kill the queen, as I should have done, but the bees did it for me in the next few days.

Elvaston, Ill. C. S. CALDWELL.

[While it is probable that the bees moved the eggs, there is no positive proof that they did.—ED.]

THE MOTH AND THE FLAME.

Like many others I have often wondered why the moth flies to the flame; and it was when I found that a bee which got shut into the house just before dusk would fly at a lamp, just as it would at a window-pane in the day time, that I began to see light. For the bee, light meant an opening for exit; darkness, an enclosure or obstacle; and then as I watched moths, and experimented with

them, I found that it was the same way with them. I think I have found the solution of the problem of "the moth and the flame," and it was the "busy little bee" that gave me the clue.

J. E. WALKER.

Shaowu, Fookien, China.

[I confess the above is new to me. I had often wondered why moths, bluebottle flies, and other insects, so persistently bump their heads against the chimney of a lamp or the electric globes; and since our brother suggests it, it seems to me very likely he is right, that they regard the bright light as a place of exit, exactly as they would fly to a knot-hole through the boards in a darkened room. Friend W. has an article on the same subject in the *Scientific American* for Sept. 1, 1906.—A. I. R.]

LIVE BEES AS A FOOD FOR CHICKENS.

The note on chickens and live bees in the November 15th GLEANINGS interested me. I should like to know whether any of your readers have ever tried the experiment of feeding live bees to young chickens which had been kept enclosed away from the beeyard so that they would have little chance to acquire experience with the bees.

New York, Nov. 27. M. A. BIGELOW.

FASTENING STARTERS IN SECTIONS BY THE USE OF A SHEET OF MICA DIPPED IN HOT WAX.

As you are continually on the lookout for the best way of doing all kinds of bee work I should like to have you try my way of putting foundation in sections. If we get a large per cent of fancy honey we need to have the foundation part just right—not pretty nearly right. If we do the work with the hot-plate method, and have the sheets as variable as they will be, not every section will be satisfactory; that is, some sheets will be a little too near one side and some a little too short to be fastened to the bottom. It is not difficult to cut up the sheets the right size. What we want is to have them stay the same size when fastened in the sections, and as near one side as the other. That is what I am able to do now, since I discovered that a piece of mica (such as is used sometimes in the doors of coal-stoves) is just the right substance to dip in a little dish of melted wax to fasten the foundation to the sections. Spacing-blocks to fit inside of the sections should be used, and of the right thickness to have the foundation in the center of the section. These blocks should be nailed on a board so as to be right for one section-holder of sections at a time; then when filled they are taken off the blocks, a holderful at a time, and put right in the supers.

Have several boards with spacing-blocks and cleats arranged to hold four sections at a time. I had two small helpers, and all I did was to sit at one corner of the table and fasten in the foundation while my helpers placed them for me; then when they were cool enough they turned them right side up and filled the

supers. Have the helpers stand on the opposite side of the table, and have the surface of the table in two parts by nailing a strip in the middle. The sheet of mica should be of the right size to reach across the edge of the foundation.

One edge of this piece of mica sheet should be strengthened for a handle by nailing two little strips of wood on each side of one edge. If other bee-keepers should think as much of this as I do, hot plates will be used less. I didn't have a sheet drop out; and, though I did the work very rapidly, every one was in right.

F. C. HUTCHINS.

Massena Springs, N. Y.

[There is much in getting used to a thing. Your plan is all right, except that it requires several spacing-boards and two helpers. The hot-plate method requires only one operator.—Ed.]

GOETZE'S CELEBRATED PAINTING.

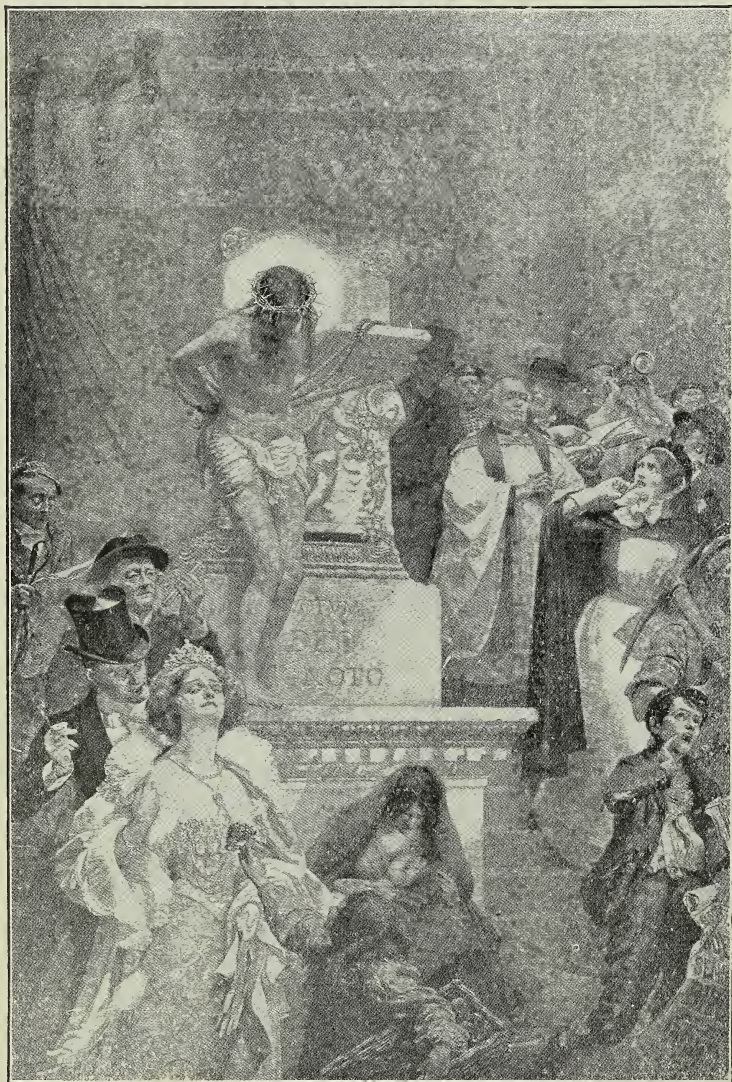
The picture in the Royal Academy exhibit this year which caused the most sensation is a large canvas painted by Sigismund Goetze, entitled, "Despised and Rejected of Men." We give a reproduction of the picture, which, as is easily seen, is a sermon on canvas. The painter-preacher says that all mankind are indifferent to the Christ, the mother bending over her babe, the man and woman of society, the scientist and the sportsman, the workman and the soldier,

the ecclesiastic and the literalist—all are as in different to the thorn-crowned Christ as the news-boy shouting the sensation of the hour.

Of all the throng, only the hospital nurse turns and looks on the Savior, and her face expresses more of alarm than aught else. It is a pointed sermon, yet, perhaps like other sensational sermons, it is overdrawn, and hence misleading. Certainly there are thoughts of God in the world. When he cometh will he not find faith on the earth?

The editor of the *Epworth Herald* says: "It is a sermon of the palette and brush, more graphic and incisive than any that has been uttered from the pulpit in many a day. The painter has turned preacher, and the Royal Academy of London is his pulpit."

But it tells only a part of the story. That part is terrible, and should be told; but the other part should be recited also, for it is a story of adoration, obedience, joy, hope, faith, devotion, achievement in the name and for the glory of Jesus Christ. He is to many, alas! an unknown God. But not all have gone with the multitude. There ought to have been room in that picture for the saints of God who are on earth, and who serve him every day with a sweetness, sincerity, simplicity, and fidelity as pure, true, and great as ever established in sanctity any saint who is in heaven."



DESPISED AND REJECTED OF MEN.—A SERMON IN A PAINTING.

See Our Homes, on opposite page.



He is despised and rejected of men; a man of sorrows, and acquainted with grief; and we hid as it were our faces from him: he was despised, and we esteemed him not.—ISAIAH 53 : 3.

Almost every day some new magazine or periodical is presented to my notice, and I have wondered again and again if this great wide world could take care of them all, read them all, and support them all. Several times I have been tempted to say we have magazines enough, and I was *almost* tempted to add that I did not want to see any more new ones. And then I reflected that every little while I come across something perhaps in the new magazines or periodicals I would not have missed for quite a sum of money. Well, a few days ago my youngest daughter brought me a magazine entitled *The Christian*. She said, "Papa, here is something that will interest you, I am sure." Then she held before me a picture representing a copy of a celebrated painting now in London. You will find the picture that met my gaze, on the opposite page. I looked at it, and as I gathered its significance the tears came into my eyes. Yes, even I in my old age had a good cry by just looking at a picture. Every little while I would look from the picture to the title, "despised and rejected of men;" and then the tears came again. I cried because I could not help feeling that the picture gave us a glimpse of the true state of affairs even in this present age. The descriptive matter that was given with the picture is also given on the opposite page.

That poor human form with his agonizing crown of thorns is bowed in grief over the carelessness, indifference, and selfishness of humanity. Although he *is* the Son of God he came to earth and assumed a human form like ours. He felt as we feel, and he suffered as we suffer, yet he was without spot or blemish. The old hymn says:

Was it for crimes that I had done
He groaned upon the tree?
Amazing pity, grace unknown,
And love beyond degree.

While he is held up prominently before all the world (for all the world knows *now* of "Jesus and the cross"), the multitudes pass by; the priests fold their hands in a holy sanctimonious attitude, and yet turn their heads the other way. The millionaires, the money-makers, and the fashionables belles of society, do not give him a passing look, much less a passing thought. Their heads are tipped in lofty disdain, for they look away *above* "Jesus and him crucified." Even the news-boy, in calling attention to the most important things in this world, from his point of view, ignores the suffering Savior. In our

thanksgiving sermon a few days ago the good pastor, B. N. Tanner, said, in summing up our reasons for thankfulness, "Brethren, what is it that really *exalts* a nation? Is it prosperity, such as we have been discussing? Is it education? Is it mental and scientific progress? Is it even conquering and preventing disease? No, not any of these. What is it then? The good Book, this *old* Book, the Holy Scriptures, tells us that it is *righteousness* that exalteth a nation. Now, friends, are we as a people, are we as a great nation, seeking *first* "the kingdom of God and his righteousness"? I fear we are not. I fear we are *forgetting* that this same righteousness is of *more* importance, and is above all and over all."

I delight in seeing this progress; I rejoice in all new inventions. I lift my heart in thanksgiving and praise when we surmount difficulty after difficulty in science and mechanics. I rejoice when we succeed in combating disease, in making the Panama region a healthy place to live in while we undertake the greatest piece of engineering the world ever saw.* But a feeling of sadness comes over me when I hear of graft and greed and extortion; when I am forced to admit that this great busy world with all its talent and ability is too much like the picture where the people are, day after day, month after month, year after year, and *century after century*, pushing by, scarcely stopping to look at the image of the suffering Savior, the thorn-crowned Christ. Thank God, there is *one* individual in that picture who has stopped and noticed the "despised and rejected of men"—a hospital nurse. Her womanly spirit cries out in protest. The painter has put whole sermons in that look. Thank God, if it is indeed true that *men* are as a rule indifferent to his claims, there are some women who are ready to stop and rebuke by their looks and actions, if nothing more, a sinful world.

When I was in the busy city of Leed, in the Black Hills, in South Dakota, I landed after dark. With the rushing multitude I went to a hotel and asked for a room. Remembering my former experiences, however, I told the clerk I wanted a room with *outside windows*. He then said that I would have to pay a price that I did not feel like paying. May be it is all right, friends, but I feel as if it were an outrage to be asked to pay more than the majority of people get for a day's work, for the privilege of having a breath of God's pure air. I felt homesick. Yes, I do get homesick when I am away among strangers, a stranger in a strange land. I told the clerk that, if he would excuse me, I would not take the room. I then got on to the trolley car and rode a mile or two out of the city. There I found a hotel where I could get a very comfortable room for *fifty cents*. Now, the dollar I saved was not because I was greedy, but because I felt as if I would rath-

*Come to think of it, if I am not mistaken there was just a little graft and selfishness exhibited in the early undertaking of that same Panama canal, was there not, friends? And this graft did not exactly exalt that nation, especially in the estimation of the other nations of the earth when the matter came out

er put it into missionary work or give it to the Anti-saloon League, in accordance with that other text in the precious word of God, "Lay not up for yourselves treasures on earth, where moth and rust doth corrupt, and where thieves break through and steal; but lay up for yourselves treasures in heaven, where neither moth nor rust doth corrupt, and where thieves do not break through nor steal." I thought I could invest the money to better advantage than paying it out for an expensive room that would not add to my comfort.

Just as I knelt down by my neat clean bed to thank God for his mercies, and to ask him to help me to be of some use in that strange land, a sudden answer came to that prayer, that thrilled me through and through. It was worth more to me than anything money can buy—yes, a thousand times more than expensive hotels or even whole cities. It seemed a little wonderful, and yet it was a simple thing after all. I had the two windows open in my room (as of course I would as it was a warm evening), and there was evidently a window open in some neighboring building, for from that open window came floating across to me, in a sweet motherly voice, the words,

A never-dying soul to save,
And fit it for the sky.

This good woman, whoever she was, was evidently busy about some household duty. The hymn came only in fitful snatches. Now, I have before heard women at work sing a stanza or two, then when at liberty they would resume it and sing a little more. Perhaps your wife has done the same thing, just as my wife does; and, oh how I do love to hear those *spontaneous* bursts of song interspersing the daily routine of household tasks! The singer waited a moment, and then she burst forth again:

Arm me with jealous care,
As in thy sight to live;
And, oh thy servant, Lord, prepare,
A strict account to give.

I have attended great concerts; I have heard celebrated singers; but none ever gave me such a thrill as those old familiar words that my father used to sing when he was a carpenter working at the bench. I think I can remember when, in answer to my mother's prayers, he was converted to the Lord Jesus Christ—the time when he stopped work and every thing else, and gazed on that Savior, and then knelt at his feet, putting his whole life into the dear Savior's care and keeping. What a happy man he was then! He would, while at work at his carpenter's bench, suddenly burst forth with snatches from some of those old hymns in a way that would almost startle people.

That night I went to sleep happy, as you may imagine, at peace with God and with all the world. Soon in my dreams I was with a crowd of friends. As I hurried along my foot struck some obstacle. I looked at it curiously. Said I to those present, "Why, what is this?" and I stooped down and picked it up. It had a familiar look. Some one replied, "Why, dear me! It must be the

crown of thorns where it was dropped when Jesus was crucified. It has been kicking about through all these centuries, and nobody has noticed it or stopped to pick it up until our old friend A. I. Root came among us."

When I woke up in the morning and began to collect my senses I almost thought my dream of the night was real; and then I wondered if the snatches of that hymn were only a dream. Well, I looked in my pocket diary, and there were the pencil-marks as I hastily noted it down the night before—

A never-dying soul to save,
And fit it for the sky.

I knelt down and prayed again that God would help me to use better the remaining days of my life toward that one end as expressed in that beautiful hymn, to help fit and train some of these little ones for the sky instead of for death and ruin.

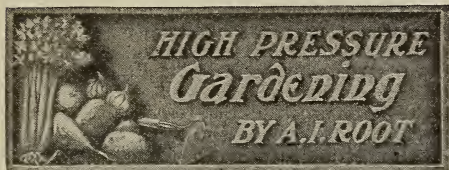
In closing I wish to make an extract from that excellent home paper, the *Sunday-School Times*. My dear friend, if somebody should ask me what is the best paper in the world to have in the family, and to have the children, father, and mother read daily, I do not know but I should say that it is this same *Sunday-School Times*. I would have that first; and if I were a farmer or gardener I would have the *Rural New-Yorker*. I do not know but I would have GLEANINGS too, if you will excuse me for this little bit of selfishness. But here is the extract from the *Sunday-School Times*:

Physical health may be an animal's first duty, but it is not man's. It is a man's duty to keep as well as he can while he does what God calls him to do. But he can never even hear God's call if he is thinking chiefly about his health. Nations are not founded, nor heathen lands evangelized, nor canals digged, nor frontiers extended, nor the kingdom of heaven moved forward in this world, by men who are thinking most about keeping their bodies well. The world would have been lost if one man had not been willing to give up his life for it. And the mystery of it is that physical health is so often for the first time found after it is endangered. A chalky-cheeked, consumptive Connecticut man in the sixties was told that he would not live two weeks if he responded to the President's call for more men. He enlisted, and for the first time found health in army-life exposure; and for forty years more he continued to be just as imprudent in God's service. Such "imprudences" are a better safeguard than a health policy.

The special point I wish to call attention to is this: "The world would have been lost if one man had not been willing to give up his life for it." When writing my health notes, and dwelling so much on what we should eat to be well and strong, I confess my conscience has troubled me several times because I have spent so much time in dwelling on the "things that perish." Health is a very important matter; it is true; but, dear brother and sister, let us not forget that we had better be sick every day of our lives—yes, we had better be crippled for life—than to be in the bondage of sin.

Now, if this copy of that wonderful painting gives you such a spiritual uplift as it did my poor self, then my talk to-day will not have been in vain. Even if it is true that he was "despised and rejected of men, a man of sorrows and acquainted with grief," it is

also true that he *is* and always *has been* and will be for *evermore* "the Lamb of God that taketh away the sin of the world."



SAVING SEED CORN; SOMETHING ADDITIONAL
TO WHAT PROF. HOLDEN HAS BEEN
TELLING US.

Perhaps I might remark that Ohio has the credit of giving the largest yield of corn per acre of any State in the Union. Now, in addition to this, Prof. Holden says the farmers of Medina and adjoining counties are considerably ahead of the rest of the State; and Prof. Green, of our Ohio Experiment Station, recently told me that more farmers from Medina Co. visit them than from any other county in Ohio. Now, this prefaces what I want to tell you about the corn convention that the farmers of Medina Co. held in one of our largest halls, Dec. 8. Prof. Williams, of the Ohio Experiment Station, gave an address. I will mention just one or two points. It is something that Prof. Holden did not allude to, if I am correct, and it was an eye-opener to me. Said he:

"Friends, when you go to the corn-cribs to pick out the best ears of corn you are almost sure to get ears that grow on stalks where there was only one stalk to a hill, or in a place where the hills were missing around it. Now, that is not what we want at all. We want to select our seed from choice ears that grew where there was a perfect stand. We want to find a strain of corn for seed that makes a desirable ear because of its inherent vigor and vitality, and *not* because of its environment."

You see the point, friends. Almost any stalk of corn would make a big handsome ear if it stood alone and no other stalk were near it; but the credit in this case comes from the *large area* rather than from the vigor or vitality of that particular plant. The moral was, that there is no way to get this high-grade seed but to go through the field in September and tie a red rag around the ears you judge will be the most desirable ones. But you want to mark a good many more ears than you will be likely to use. After husking-time these largest ears are to be weighed and culled. Some farmers mark the largest specimens by clipping off the tassels with a corn-cutter; but as the stalks are liable to be broken in husking, this is not as reliable a plan as to use a "red tape." One more point was something as follows:

"I suppose most of you have injury more or less from corn being broken down by

windstorms, big blows, etc. You probably decide that these things can not be helped; that tornadoes are the "act of God," as the railroad companies put it, etc. But look here. Down at our Ohio Experiment Station last year we planted a great number of ears of corn, in a field so long that *each ear* made a whole row; and I will just tell you one of the things that we found out by this experiment. After a big rain and wind-storm, row No. 1 was nearly half broken down; row No. 2, worse still. Only here and there was a stalk standing up; but, lo and behold! row No. 3 was standing up almost entire from beginning to end, only an occasional stalk being bent over and broken off here and there. What does this teach? Why, that some ears produce a stouter and *stronger stalk* than others. If we save our seed corn from this row that did not blow down, for next year, we *should* have a field of strong stalks that would stand most blows. Now, suppose the ear that produced No. 2, where they broke over so badly, had been planted in the usual way and the product scattered all through the field. Then you would have seen the broken-down stalks all over the field, and supposed, of course, there was no remedy."

After he closed I said to him, "What a pity it is, professor, that wheat and oats do not grow on ears so we could work the same plan with them!"

"Why, bless your heart, Mr. Root, we can do the same thing with wheat or oats, even better than with corn. Each grain produces toward a dozen stalks, and we just take up the whole hill with all the heads, and make our tests, and, if desirable, plant."

Then I asked about green corn and popcorn. He said there was no question but that the same plan would work. "Finally," said I, "why can we not go on with beans and all other garden vegetables? and not only this, but considering what can be done with plant life is it not possible to work the same with domestic animals?"

"Why, to be sure it is, Mr. Root. Great progress is being made in weeding out the unprofitable cattle; and with the trap nest we are getting strains of fowls that produce 200 eggs a year—yes, 250, and I believe there are a few cases where a single hen in one year's time laid over 300 eggs. A flock of poultry where the drones and those that lay only occasionally have been weeded out will yield an immense profit compared with the ordinary flocks in farmers' dooryards."

Of course, the above is not exactly his talk, but it is the substance of the conversation; and do you not think, friends, that every branch of rural industry is showing us possibilities that heretofore the most sanguine have never dreamed of? Luther Burbank is by no means the only man who is developing new and unexplored regions along this line.

MY DUCK STORY.

While visiting with George W. Park (the great flower-seed man), at Lapark, Pa., last

summer, he told me there was a duck-ranch newly started, not very far away, and he had been told they had been running it on a very large scale, and he suggested that we drive over and see it. I told him I was always interested in ducks, because one of my first boyhood ventures was setting some duck eggs, that we found at our country store, under a hen. After they were hatched out I made a miniature pond for them, and the antics of those ducklings in the water was one of the joys of my childhood. Finally a big cat discovered they were "good to eat," and my duck speculation suddenly played out.

Well, friend Park and I found the place where a lot of new buildings had just been put up, and a great lot of duck pens were made on the side-hills sloping down to a pond of water. Each enclosure had a building for shelter and also included a portion of the pond, so they could all get into the water when they felt so inclined. As we drove up and asked permission to look over the plant I said to the manager, "Why, my friend, how many ducks *have* you here all together?"

"Well, stranger, to be exact, there are, as nearly as I can make out, just now 9987 ducks all told, big and little."

"Whew! Can't you manage somehow, by stretching the figures a little, to call it an even 10,000?"

"Well, I suppose I might if I tried hard. Come to think of it, I have not been down to look at the incubators for a couple of hours; and I should not be surprised at all if there were enough hatched out by this time to make up the 10,000, and may be a little more."

Well, this immense ranch, although it had been running only a few months, was a grand success—that is, so far as we could discover. It seems here they did not allow the little ducks to go into the water. I do not remember the reason why, and perhaps they did not tell us. The little ducks, like the big ones, have a building for shelter, and this building is divided off so there are, perhaps, only forty or fifty ducks in a pen. Each pen has a poultry-netting inclosure outdoors, so the ducklings can go out whenever they feel inclined. Most of them were outdoors, stretched out in the sun; but when the sun came out too hot, some of them would go over to a shady place provided for them. They were all so healthy and strong I began to be a little suspicious. Said I, "Why, my friend, with all these hundreds and *thousands*, you certainly must have some sick or ailing ducklings. Where are they?"

"Oh! they are off at the hospital. Just as soon as a duck shows any weakness or indisposition it is put off by itself, if there is any possible chance of contagion. If you want to see the hospital it is over this way."

Well, out of 10,000 (perhaps only half of that number little ones), there were, may be, forty or fifty sick ones. There were a few almost dead, and some of them, evidently, had not decided whether they would live or die; and then there were quite a few that were getting so as to run about. These were

sorted out and put into a convalescent-pen; and when they showed full health and vigor they were allowed to go with the others. I do not know what the average mortality is, but I think it is not very much after they get beyond a certain age. I can not tell you any thing about the profits of such an institution; but I presume that, where intelligently managed, and when the market price is fair, it pays very well; but I do not think any man living can run such an institution successfully until he has commenced on a small scale and worked up; and unless he is right on hand, and on the alert, with the aid of all that modern science can give him, he is very apt to have a sudden collapse in his finances. Whenever great multitudes of domestic animals are brought together on a small area, contagious diseases are almost sure to break out. But it is encouraging to know that modern science and skill are making headway.

We can grow ducks by the thousands; we can manage the hog cholera, and even tuberculosis in cattle; and I think it is accomplished along the line in which these people have succeeded with their duck-farm. Last, and not least, skill and science seem to be demonstrating that we can take a great crowd of men into a malarious locality like that of Panama, and so manage that the average mortality will not be greater than in what are called healthy localities in the North. May God be praised for what has been accomplished by earnest study and careful experiments.

RATS—WHAT SHALL BE DONE?

I have just asked our Ohio Experiment Station to advise us in regard to getting rid of rats; and I think it high time that the Department at Washington should send out a bulletin advising farmers as to how they can best manage the rat problem. If any of our readers have had experience in banishing rats by the use of ferrets, we should be glad to hear from them. Some years ago we used a ferret, but the rats came right back soon after the ferrets had been taken off; and it is something of a care and responsibility to keep ferrets on the premises.

MORE ABOUT THE RAT BUSINESS.

The following comes from our good friend R. H. Lodge, Silver Lake, O.

Take a large iron kettle to the place where the rats run, and fill it half full of rye and chaff. Then a board is placed with one end on the kettle and the other on the floor. In two or three days all the rats on the premises come there to eat. Then the rye and chaff are removed and water put in, and some chaff scattered on it. The rats jump in as usual, are drowned, and are taken out every morning and buried. Over 200 have been caught thus within three weeks.

Read

the ad. in the Dec. 15th issue about bee-
goods and specialties from A. MEES,
Herenthals, Belgium. Write for catalog
or for wholesale prices.

Special Notices

By Our Business Manager

BEESWAX ADVANCED.

From this date until further notice we will pay 30 cents cash, 32 trade, for average wax delivered here or at our branch offices. This is a higher price than we have ever paid before at this season of the year. If any of our readers have any wax to dispose of we shall be pleased to hear from them. Be sure to mark your shipment with your name so that it may be identified on arrival, and mail us shipping receipt with gross and net weight of shipment.

COMB FOUNDATION ADVANCED.

We came to the close of the season last July with a good stock of beeswax on hand, which, with what we have had from producers, has kept us going till now without our buying from wax-dealers. When we come to replenish our stock we find that the supply is short, and prices have advanced sharply, so that the market at present is fully 2 cents a pound higher than at this time last year, and fully as high as at any time during the past two years. It is unusual for prices to be so firm this early in the season, and we are not warranted in issuing our catalog with the old prices on comb foundation, as they would have to be raised very soon if the increase were not made now. We have determined, therefore, to mark up all prices 2 cents a pound. New prices—retail, wholesale, and jobbing—take effect this date. The revised retail list will be as follows:

GRADE	Size, and sheets per pound	IN LOTS OF				
		1 lb.	5	10	25	50
Medium Brood...	7 7/8 x 16 1/4 7 to 8	58	55	53	51	50
Light Brood....	7 7/8 x 16 1/4 9 to 10	60	57	55	53	52
Thin Super.....	3 7/8 x 15 1/2 28	65	62	60	58	57
Extra Thin.....	3 7/8 x 15 1/2 32	70	65	63	61	60

Special Notices by A. I. Root.

THE CONSUMPTIVE WOMAN WHOSE CHICKENS WERE STOLEN.

ON page 1449 I spoke of a woman threatened with consumption, having her chickens stolen, etc. One of our family suggested that the readers of GLEANINGS chip in and make up to her the loss of her chickens which she took so much care and pains with. I am glad to see expressions of sympathy for those who are in trouble; but it is my sad duty to tell you that this good woman died recently of the very disease that threatened her—consumption. Just think of it, friends. How can one calling himself a man be so depraved, and so lost to all that belongs to manhood, as to steal a poor woman's chickens under the circumstances I have mentioned?

HOW TO ROAST CHESTNUTS.

If you put them on top of the stove you must cut a slit through the shell or they will burst open and fly all over the house. Our Italian friends manage it by making a cross with a sharp knife. But that is considerable trouble, especially with the small American chestnuts. After considerable experimenting, my way is this: Unscrew the handle from your corn-popper, fill it with chestnuts, and set them in the oven. You will not forget and let them burn up as you might do with peanuts, for when they are cooked to a turn you will hear such a popping that no one on the premises would miss the message, "We are done—come and take us out."

Convention Notices.

The annual meeting of the Nebraska State Bee-keepers' Association will be held at the Experiment Building at the State Farm, Lincoln, Neb., on January 16, 1907. An interesting program on practical subjects has been prepared, and bee-keepers will be benefited by attending.
LILLIAN E. TRESTER, Sec.

The New Jersey State Bee-keepers' Association will meet at the State-house, Trenton, N. J., on Wednesday, Jan. 16, at 10.30 P. M. Addresses will be made by the President, by Chas. Stewart, foul-brood inspector, Sammonsville, N. Y.; H. S. Ferry, Mt. Vernon, N. Y.; J. H. M. Cook, Caldwell, N. J., and others. All bee-keepers, and especially ladies, are cordially invited to attend.
G. N. WANSER, Sec.

Program of the second annual convention of the Washington State Bee-keepers' Association, held at State College, Pullman, Washington, Jan. 7-9, 1907.

FIRST SESSION.

Monday, January 7, 7:30 P. M.

Meeting called to order by the President. Reading minutes of last meeting, and report of Secretary and Treasurer.

Annual address of President, Anson S. White.

The honey flora, and how to improve it; and zig-zag journeys among bee-keepers in Southern Idaho, Eastern Washington, and Oregon," by

A. A. Hansen, Lewiston, Idaho.

DISCUSSION.

"Co-operation in buying supplies and marketing honey," by

R. C. Aiken, Loveland, Colo.

DISCUSSION.

Question-box.

MORNING SESSION.

Second day, January 8, 9 A. M.

"Foul brood and other diseases," by

E. F. Atwater, Meridian, Idaho.

DISCUSSION.

"Exhibiting apianian products at fairs," and "A model premium-list," by

Anson S. White, Cowychee, Wash.

DISCUSSION.

"Adopting a uniform package; best size and kind," by

J. B. Adams, Kennewick, Wash.

DISCUSSION.

AFTERNOON SESSION.

1:30 P. M.

Election of officers.

"The pure-food law and its relation to apiculture."

DISCUSSION.

"Out-apiaries and their management."

DISCUSSION.

"Relation of apiculture to fruit-growing," by

Professor F. A. Huntley, North Yakima.

DISCUSSION.

"The importance of a good location," by

J. W. Thornton, North Yakima.

DISCUSSION.

EVENING SESSION.

7:30 P. M.

"Bee culture as an aid to nature study," by

Professor A. J. Cook, Pomona, Cal.

Stereopticon lecture, "The wild bee and his evolution," by

Professor A. L. Mealand, Pullman.

MORNING SESSION.

Third day, January 9, 9 A. M.

"Producing comb and extracted honey in the same apiary," by

Dan Macy, Walla Walla, Wash.

DISCUSSION.

"Queen-rearing and requeening," by

Isaac Hayes, North Yakima.

"My experience," by

J. W. Linley, Wallula.

DISCUSSION.

"Establishing a State Apianian experimental station," by

Professor E. E. Elliott, Pullman.

"The honey-eaters' league," by

L. R. Freeman, North Yakima.

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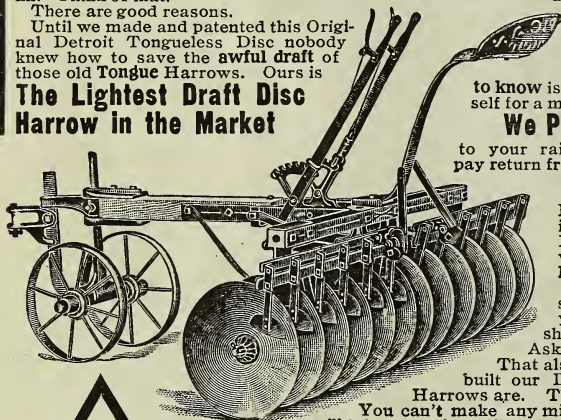
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